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ABSTRACT

A government-commissioned study in Australia investigated the experiences of a number of countries with performance-based funding of universities and examined the potential for its application in Australian higher education. The study found various forms of performance-based funding in different countries (England, Scotland, Germany, Netherlands, Sweden, Denmark, United States, Chile), which used both teaching/learning outcomes and research productivity as performance measures. The Australian form of performance-based funding for distribution of substantial research funds was examined, and it was concluded that this approach could skew faculty attention away from teaching. Considerations in establishing teaching/learning-based indicators and implementing a new performance-based funding system using them are discussed. Recommendations include making a gradual rather than sudden, transition to such a system and conducting a number of trials and pilot studies to avoid disruption of systems, services, and confidence. Substantial study-related documentation is appended. (Contains 23 references.) (MSE)

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Higher Education Council

Performance-based Funding of Universities

Commissioned Report No. 51

November 1996

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Higher Education Council

Performance-based Funding of Universities

Commissioned Report No. 51

Don Anderson
Richard Johnson
Bruce Milligan
Australian National University

November 1996

Australian Government Publishing Service
Canberra

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Preface

In the aftermath of the recent expansion of higher education, governments around the world have begun to grapple with the resource demands of modern universities and how to finance them. Public sector reform has led to a greater interest in accountability for government expenditure and a desire to ensure value for money. In this context, performance-based funding has become a popular instrument for improvement and accountability. In the past, most systems of higher education have been funded on a historical cost basis and few have had funds tied to performance. The Higher Education Council commissioned this study to explore the literature on performance-based funding in overseas higher education systems and to examine the extent to which Australian universities are currently using such processes to allocate their resources internally.

This report surveys the experience of performance-based funding in a number of countries where it has been applied to universities. As well, it covers examples of such use within Australian universities. The authors have reviewed the extant literature on performance-based funding in higher education, drawing attention to some of the difficulties associated with this approach to funding. They have provided a useful set of design criteria and strategic issues which need to be addressed when considering such an approach to funding.

The Council in commissioning the report felt that it was important that the sector become aware of the international experience of performance-based funding. By bringing together the experience of different systems, the report is a valuable contribution to the literature on higher education. The authors are to be congratulated in their informed and scholarly approach to the topic.

One disappointing outcome is that, despite the apparent interest in performance-based funding, the authors have been unable to uncover much in the way of evaluation studies on the effects and efficiency of such funding systems. Perhaps researchers in the field of higher education will take note and endeavour to carry out some evaluative studies.

The views expressed in the report are those of the authors and the Council in publishing the report does not specifically endorse them. Council trusts that by publishing the report it will contribute to a better understanding of this approach to funding and stimulate further debate and discussion.

Professor Gordon Stanley
Chair, Higher Education Council

Acknowledgements

This study was commissioned by the Higher Education Council of the National Board of Employment, Education and Training. It was carried out by a group based at the Centre for Continuing Education at The Australian National University. The group comprised: Don Anderson (project director); Geoff Caldwell; Richard Johnson; Bruce Milligan; Colin Plowman. A steering committee was established by the Higher Education Council to oversee the project, and their assistance is acknowledged with gratitude.

In the course of the study the Centre for Higher Education Policy Studies at the University of Twente, The Netherlands, was commissioned to prepare reports on performance-based funding in six European countries. The assistance of the Director of the Centre for Higher Education Policy Studies, Frans Van Vught and of Ben Jongbloed who assembled the reports in Appendix 2 under strict constraints of time is gratefully acknowledged.

It would not have been possible to get as much information as we have about practice in the United States without the generous assistance of Dr Elaine El-Khawas of the American Council on Education. Through her good offices we received useful material from Professor Trudy Banta, University of Indiana; Dr Roger Elliot (on behalf of Dr K. Ashworth) of the Texas Higher Education Coordination Board; Dr Donald Goss of the Tennessee Higher Education Commission; Ms Melodie Christal of the State Higher Education Executive Officers Communication Network. They are all cordially thanked.

Maurice Kogan of Brunel University kindly gave us many leads to the literature and to information on funding in the United Kingdom. Agneta Bladh, Director of the National Agency for Higher Education Sweden, kindly checked our early drafts on the Swedish funding system and gave us additional material. Anders Franssen and Dan Brandstrom also provided us with reports on Sweden.

Colleagues at the Organisation for Economic Cooperation and Development, Pierre Laderriere, Malcolm Skilbeck and Alan Wagner all spent time discussing the project with us and contributed insights concerning the practice of performance funding. The Australian representative at the Organisation for Economic Cooperation and Development, Shelagh Whittleston, kindly arranged for contacts with offices in the United Kingdom.

In Australia Giles Pickford of ANU Public Relations pointed us to the recent developments in Denmark and gave us an advance copy of his conference paper. Paul Bourke, head of history in the Research School of Social Sciences at The Australian National University, gave us ideas on the use of performance indicators and pointed us to valuable sources. Terry Stokes and Lisa Garbellini of Monash also contributed ideas and kindly gave us the correlation analysis used in Chapter 5. Ron Gardiner of the Queensland University of Technology generously loaned us his own collection of material on funding.

The vice-chancellors of Australian universities agreed to participate in the project and we are grateful for this support. Each university appointed a contact officer who arranged for the responses to our survey questions and, in the case study institutions, agreed to be interviewed. We are most grateful for this contribution.

Interviews were also conducted with John Mullarvey (Australian Vice-Chancellors' Committee), David Phillips (Head of Higher Education Division, DEETYA), and Michael Cusack (Head of Research Branch, DEETYA), and we appreciate their thoughtful contributions.

We are grateful also to Beverley Bullpitt who converted our rough assembly of materials into a manuscript of publishable standard.

The project consisted of: a literature review; a questionnaire to all Australian universities; visits to 13 selected universities; and a one-day workshop to discuss a range of options. We are grateful for the co-operation we received from so many colleagues in other universities.

Abbreviations and Acronyms

ARC	Australian Research Council
AUCF	Average Unit of Council Funding
AVCC	Australian Vice-Chancellors' Committee
CAE	College of Advanced Education
CAUT	Committee for the Advancement of University Teaching
CEQ	Course Experience Questionnaire
COU	Council of Ontario Universities
CQAHE	Committee for Quality Assurance in Higher Education
DEET	Department of Employment, Education and Training (until March 1996)
DEETYA	Department of Employment, Education, Training and Youth Affairs (after March 1996)
EFTSUs	Equivalent Full Time Student Units
EIP	Evaluations and Investigations Program
HBO	Dutch institutions offering higher vocational education
HEC	Higher Education Council
NCGs	National Competitive Research Grants
OECD	Organisation for Economic Cooperation and Development
PBF	Performance-based Funding
PIs	Performance Indicators
R&D	Research and Development
RIBG	Research Infrastructure Block Grant
RMIT	Royal Melbourne Institute of Technology
RQ	Research Quantum
TAFE	Technical and Further Education
TER	Tertiary Entrance Rank

Executive Summary

Universities have come under increasing pressures for accountability as public expenditure on them has risen. One form of accountability that universities are sometimes urged to use is performance-based funding. Performance-based funding aims to ensure that universities are funded on what they achieve according to agreements with the funding authority, not simply on attempts to achieve.

There are various forms of performance-based funding in other parts of the world: Sweden and Denmark funding by student completion rates, England rewarding research achievement after peer review, Tennessee funding a bonus sum for year-on-year improvement on agreed performance targets, Chile funding on enrolments of high-achieving students. In Australia there is no system of performance-based funding based on teaching/learning performance. There is a form of performance-based funding for distribution of an important element of research funds.

The research quantum is distributed on the basis of the composite index, with the result that universities which earn most funds from national competitive grants (such as Australian Research Council grants) receive the largest share of the research quantum. The teaching work of universities is funded by size and mix of enrolments without regard to outcomes or quality of teaching. This can have the effect of skewing academics' attention towards research and away from teaching.

If government, as the funding authority, wanted to institute a regime of performance-based funding, indicators of performance would have to be devised which were acceptable to the universities; this would best be done by involving them in the devising of the indicators. A transitional period would be necessary to avoid massive disruption in a sudden shift from one funding regime to another.

Since universities require a high measure of stability of funding for their best operation (as reflected, for instance, in the triennial funding system) they would need to be protected from year-to-year fluctuations in funding arising from short-term fluctuations in performance. Trends over several years would be more reliable indicators of underlying performance. These tend to become apparent now in the profile negotiations.

The evidence from those systems that use performance-based funding suggests that in moving to such a system it is best to move slowly, after trials and pilot studies, and with small sums of money involved at first, gradually increasing as the funding authority and the universities gain experience and confidence in the system.

1

Present Funding Mechanisms in Australia

It would be reasonable to assert that the funding of universities in Australia is basically student driven. Although it is true that the bulk of the funding comes from governments, and that a significant proportion of it (whether from governments or elsewhere) is for purposes of research, most of the general operating funds of universities are allocated on the basis of student load. That is, universities are funded in fairly direct relation to the number of students they have and the subjects in which the students have chosen to enrol. The system is not open-ended; the numbers are capped. The control exerted by governments and universities is mainly over the numbers they will fund and the numbers they will admit to particular fields of study; it is a control by restriction rather than by direction, and the initiative rests with the individual student.

Although this is a common basis of university funding in the industrialised world, and although it depends on universities being able to attract and retain students, it is not universal, and it is not free from criticism. An American scholar lists some of the criticisms:

> It emphasises growth as a measure of achievement. To obtain significant additional dollars, an institution has to add students.
>
> It encourages a displacement of purpose. Since growth is the principal achievement rewarded, serving students is displaced with the goal of obtaining more students.
>
> It provides no incentive for qualitative improvements. A programme with mediocre performance record is funded at the same level as one with a better performance record.
>
> It encourages a lowering of educational standards as a means of maintaining enrolment levels.
>
> (Bogue 1988, p. 27).

It also gives an impression of university education as a private rather than a public good, a personal choice of the student rather than a means of advancing society. It is a funding by input and retention without necessarily requiring an acceptable level of outcome. At a hypothetical extreme, a university could, under this system, maintain its funding if it maintained enrolments, even if nobody ever graduated and its scholars never published.

That hypothetical situation is, of course, ridiculous. Besides the constructive inclinations of academics generally in Australia, there are several measures of performance already in place:

- the profiles negotiations which determine what a university will do with its public funding;
- the quality assurance measures that all universities have been encouraged to develop and apply; and
- reviews of some or other aspects of university performance, either system-wide or in individual cases.

There is also the public perception of individual universities, erratic as that may be. Nevertheless, these all affect funding only at the margins.

Universities will always behave in ways calculated to maximise their resources. If the main source of funds is student enrolments, some will attempt to maximise their enrolments up to the target figure, often even if this means dropping admission requirements to the point where a high proportion of those admitted will not succeed in their course—or else, the standards of the course may be adjusted to fit the intake. Furthermore, almost inevitably most universities do use, for their internal allocations to faculties and departments, the Relative Funding Model which is used to allocate resources across the sector, although the Government funding authority has specifically said that they should not. As a consequence, within universities we find departments scrambling and competing for students, and we find high-quality and nationally valuable fields of study under threat because they have few enrolments.

If we set aside funding based on student load, there is in Australia no system which assures a university performing highly that it will be treated much more generously in its basic operating grant than a mediocre place. Research is to a large extent funded on past performance, as will be discussed further below. The Higher Education Contribution Scheme is performance-based funding applied to tuition costs in a curiously negative way, in that failure or dropout from a course is not refundable. Also, professional accreditation of courses is a powerful influence indirectly linked to funding through student enrolments. These are instances of partial performance-based funding; there is no full-fledged performance-based funding system.

In its 1988 White Paper on Higher Education, the Government stated its intention to develop a funding system 'that responds to institutional performance and the achievement of mutually agreed goals' and 'takes into account a range of output, quality and performance measures'. In 1991 a research group chaired by the late Professor Russell Linke produced *Performance Indicators in Higher Education* but its recommendations have never been fully implemented throughout the sector. On the other hand, performance measures have been used in distributing funds through the

Quality Assurance rounds, in equity funding and in distributing the research quantum. The question remains whether all operating grant resources, or a greater share of those resources, can be allocated on the basis of output or performance measures.

This paper does not attempt to argue for or against such a system. It aims to explore the issues, taking account of what happens in some other parts of the world, and in some procedures in some universities in Australia, and to set out the merits and limitations of various forms of performance-based funding.

Performance Measures

Performance measures may be measures of efficiency, effectiveness or quality of performance.

Efficiency may be defined as a relationship between inputs and outcomes, or between inputs and effectiveness. The lower the inputs for a given level of outcomes or effectiveness, or the higher the outcomes or effectiveness for a given level of inputs, the greater the efficiency.

Effectiveness is the extent to which the desired outcomes or objectives are achieved. It therefore requires those to be specified. A number of stakeholders may have a say in specifying the desired outcomes. These stakeholders need to be identified.

Performance measures must be appropriate to the objectives; they must measure achievement reliably, that is, consistently and independently of unrelated factors; they must be usable, that is, affordable, clearly understood and easily applied. They do not have to be quantifiable; many will be, but qualitative measures in particular are likely to be comparative or on a nominal scale where the top is 'best practice' which itself is a shifting mark.

Performance can fairly be judged only against goals or objectives or mission. Therefore the first questions, either for a university or component parts of one, are:

- Does it have explicit and usable statements of goals?
- Does it have stated and usable measures of performance against those goals?
- Are these from time to time reviewed as circumstances change?

As a basis for funding, the performance measures could suggest:

- Which are the most efficient institutions and components, and therefore likely to best use the funding they receive?

- Which are the most effective institutions and components in achieving their goals?
- Which institutions and components achieve the highest quality or rate of quality improvement?

Measures of effectiveness can be devised from parameters such as:

- student performance
- student satisfaction both immediate and long-term
- staff performance
- staff satisfaction
- employer satisfaction
- community satisfaction

—although clearly these measures will vary, and may indeed conflict.

All of these have sub-elements, for instance, staff performance in teaching and in research. The outcomes can be correlated to inputs to derive indications of efficiency. The measures of satisfaction perhaps can be gained only by surveys, which can be costly to devise, administer and analyse.

In its publication *Achieving Quality*, the Higher Education Council approached the issue of quality of educational programs by asking what attributes a graduate should have; questioning how universities assure the quality of each of the processes within institutions to achieve the required outcomes; and raising the issue of the value added by the educational process to the qualities the student had on entry to the institution.

The basic attributes of graduates were listed by the Higher Education Council as:

- generic skills (intellectual, social, personal);
- a body of knowledge in the relevant field at an appropriate level; and
- job-related skills which can be applied immediately in employment
  - these will be both occupation-specific and more general (e.g. ability to work with minimum supervision in the relevant field, ability to apply learning in the workplace).

Other possible performance measures listed by the Higher Education Council are:

- student recruitment rates at various levels;
- progression rates;
- graduation rates; and

- external image and reputation of the institution.

The last can be found only by survey but the others come from institutional data.

As distinct from funding universities according to student load, performance-based funding links part or all of the funds to achievements in the areas of teaching, learning, scholarship, research or other activities with the intention of focussing attention on processes and promoting greater efficiency or effectiveness.

Performance-based funding may be used to distribute income across a system or it may be applied within institutions for the distribution of resources between faculties or departments.

Performance-based funding may be applied to the entire base funding of an institution or to part of it. In the latter case the proportion is usually estimated as the minimum amount necessary to induce the desired responses.

The indicators used for performance-based funding may be based on readily available information of the sort that is routinely available from statistical collection, or it may use the results of peer review, quality audits or exercises specifically designed to measure achievement. Quantitative measures from quality assurance exercises may be directly linked to funding, e.g. as is proposed by Britain's Higher Education Funding Council for England; or the link can be indirect as in The Netherlands, where the minister may reduce funding after an inadequate response to a critical review.

2

Performance-based Funding Overseas

This is a summary treatment of several countries. A more extended treatment of the European countries is provided in Appendix 3 which contains the reports commissioned for this project from the Centre for Higher Education Policy Studies at the University of Twente.

England

The Higher Education Funding Council determines the funds to be distributed for teaching from the total available for teaching, research and other activities. This is then distributed among institutions by using a 'core-plus-margin approach'. The core is the part of an institution's grant for teaching that is taken forward from one year to the next, thus providing financial stability. The margin represents the part of teaching funds intended for the funding of additional student places, the development of infrastructure and the support for specific initiatives in teaching. The margin is allocated on the basis of competition. The core is also indirectly affected by competition, as we will see below.

The calculation of the core funds awarded starts with information provided by each institution on the distribution of its teaching funds and student numbers over the respective cost units, the so-called funding cells. These cells are defined by 11 academic subject categories (fields of study), two modes of study (full-time and sandwich versus part-time) and two levels of study (undergraduate and postgraduate-taught versus postgraduate research). All in all there are 44 (11 x 2 x 2) funding cells. Because each institution is free to spend the Council grant internally over its cost centres, it is up to the institution to decide how much grant to allocate to each funding cell. The Average Unit of Council Funding (AUCF) is calculated for each institution by dividing the amount of Council funding in each funding cell by the number of local and European students in that cell. Thus, the 'public cost' per student place can be compared between institutions for each funding cell, leading to a ranking of institutions. This allows a competitive element to be introduced.

The Higher Education Funding Council in its policy statements stresses that the Average Units of Council Funding should not be interpreted as representing the cost of teaching students in any particular category. They are a reflection of how each institution chose to spend its (current) grant within a constrained competitive process (for the next year's grant). On the

basis of the AUCF-outcome and its place in the ranking, the Higher Education Funding Council decides how an institution's core funds for a particular academic subject area will be adjusted and how much it will receive in terms of margin (extra) funding. Core funding in each cell is adjusted for inflation and, negatively, for an 'efficiency gain', currently -3 per cent.

The Higher Education Funding Council England has, after extensive consultation, developed a methodology for the assessment of the quality of teaching and learning, involving institutional visits. A discipline or subject based approach is used, the unit of analysis being the individual university department. Educational provision in each department is assessed on six separate dimensions:

- curriculum design, content and organisation;
- teaching, learning and assessment;
- student progression and achievement;
- student support and guidance;
- learning resources; and
- quality assurance and enhancement.

There are self and peer assessments of staff. Each of the six dimensions or topics is to be scored on a scale which runs from 1 (poor) to 4 (very good). Thus a department that is very good in all domains would score 24 points; one that is uniformly poor would score 6. It should be noted that the Higher Education Funding Council England tries to discourage adding up scores.

This is clearly a very ambitious approach given the number of universities and departments. There are for instance, more than 80 departments teaching English. There are numerous teams of assessors and a program of training for assessment teams tries to ensure that evaluations are both reliable and valid. Normally, each department would be assessed at four-yearly intervals. Departments assessed as unsatisfactory, however, will be visited again in twelve months.

When the system was first announced by the Government in 1992 it was foreshadowed that the results would be used to reward good performance through the funding system. More recently the Higher Education Funding Council England has been cautious, suggesting that, once the system has been trialled sufficiently and adjusted in the light of practice, it could be

linked to institutional funding.[1] In the meantime where quality is found to be unsatisfactory, the institution is allowed up to 12 months to remedy the situation. An institution with a subject that remains rated unsatisfactory after two visits by the Funding Council's assessors will have the relevant part of core funding (and student places) immediately or successively withdrawn.

All United Kingdom research assessments made by the higher education funding councils are strongly linked to allocations. A bit more than one-third of the funds granted by the councils to universities in 1992 were for research. About half of this was related to numbers of research students and research grant income, the remainder was distributed on the basis of gradings of departments or subject groups, made by a panel of experts. For the 1996 Research Assessment exercise 60 panels have been constituted to assess the quality of research in 69 subject units of assessment. These exercises are conducted every three or four years, the last being in 1992. The experts have a substantial volume of data submitted by institutions on the outputs of research, principally publications by staff members. Only the work of staff designated by their department as 'research active' is taken into account. Departments are asked to list up to four works produced by each research-active member of staff during the assessment period.

Scotland

Teaching

In 1995 the Scottish Higher Education Funding Council consulted institutions about the possibility of introducing some form of output-based funding for teaching. As a result of the consultation, it decided not to make major changes to its method of funding teaching. There was a high degree of consensus amongst the responses to the consultation arguing against radical change to the Council's method of funding. The chief arguments put forward against a method of funding teaching directly related to outputs were:

- such a method could threaten standards and would probably reduce access;
- such a method would be more complex and would lead inevitably to increased administration and a reduction in the transparency of the funding method; and

1 'Under the Further and Higher Education Act, 1992 a statutory system of external assessment of the quality of education across the higher education sector was installed for the first time in the UK. It was to be administered by the Funding Councils and the intention was to link it with differential resource allocation' (Henkel 1996).

- it is too soon to be making fundamental major changes to the existing method of funding teaching, particularly in the absence of clear evidence that a new method would bring benefits.

Underlying the debate were two different ways of looking at the output of higher education. In one view the output is the graduates and diplomates produced, in the other the output is the process of education itself. A number of respondents argued that concentration on output, in the form of the graduates and diplomates produced, was not the best way to improve the value for money of the Scottish higher education system. This argument was supported by the fact that, by international standards, completion rates for Scottish higher education are high.

It is also worth noting that student enrolment beyond the first year of a course could be regarded as a good proxy indicator of student achievement, and therefore the Council's existing method of funding teaching already has elements based on indicators of this form of output. Any change in the funding methods should be directed at encouraging institutions to maintain and improve the quality of teaching processes. In other words, poor completion rates needed to be remedied as part of the quality enhancement process.

As a result of the consultations the Scottish Higher Education Funding Council decided to continue its current method of funding for teaching using student enrolments in subjects where teaching quality is assessed as satisfactory or better than satisfactory, as the main determinant of funding levels. The Council will also continue to use teaching quality assessments to inform other aspects of its teaching funding decisions. The Scottish Higher Education Funding Council intends to introduce a system to identify and remedy cases where there are unacceptably high wastage rates.

In summary, the Scottish Higher Education Funding Council's method for the funding of teaching differs somewhat from the core-plus-margin approach used by the Higher Education Funding Council England. In Scotland the 'core part' (the main teaching grant) competition on the basis of efficiency is less. There is no role played by the Average Unit of Council Funding as in England. However, as in the case of the English margin funds, there is an element of (price) competition in the allocation of extra funded places to Scottish institutions.

Research

In the funding of research, similarities between England and Scotland are greater. Research activity and research quality both play a role. However, the Scottish Higher Education Funding Council seems to pay more attention to the

relative allocations awarded to the different (sub-) disciplines: it first decides on allocations per discipline on a national level, and then decides on the distribution among institutions (departments). Compared to England, stability in the yearly allocation of funds seems to play a more important role.
At present 95 per cent of total research funds is based on a formula-driven, performance-oriented method. The remaining 5 per cent is allocated under the heading of 'research developments' for selected research activities.

The distribution of research funds involves:

- first, allocating the funds among the (72) subjects or areas; and
- then, distributing the funds for each area among eligible departments, in proportion to the product of an indicator of research quality multiplied by an indicator of research volume.

Germany

The only performance-based funding in German higher education is some pilot projects in four of the 16 states. The committee of education ministers (Kultusministerkonferenz) has, however, set up a working group to investigate the possibility of introducing some form of formula funding. The investigations are looking at proposals for making the teaching budget more dependent on variables connected to teaching. Variables such as teaching load, performance and innovation plans may be playing a role in this.

At present only four states employ formula funding, and only to a minor extent. These are: Niedersachsen, Nordrhein-Westfalen, Rheinland-Pfalz, and Sachsen. Formula contingent funds only concern non-personnel expenditures. The salary budgets continue to be distributed outside of a formula; in fact, in their yearly financial reports and budgets, universities often do not even include personnel budgets because these expenditures are largely beyond their influence.

Details of the performance components of the formulae in these four states follow. It is noteworthy that Nordrhein-Westfalen includes the amount of research council funds and number of doctoral degrees as indicators. This is the only system we have found where something like the Australian Composite Competitive Index is used, although there is no count of publications.

Niedersachsen

In Niedersachsen just under one per cent of the total higher education budget is allocated by means of a formula and concerns supplementary funds for teaching and research. The only performance component is 'students within the normal course length' which gets a two-thirds weight. Normal course duration is three years for Fachhochschulen (technical institutes) and 4–5 years for universities.

Nordrhein-Westfalen

In Nordrhein-Westfalen 5.2 per cent of the higher education budget is allocated by means of a performance-oriented formula. Until 1992, supplementary funds for teaching and research were allocated on the basis of the number of academic staff positions and the number of students within the normative length of their programme (*Regelstudienzeit*). For the 1993 budget, supplementary funds for universities and Fachhochschulen were distributed on the basis of the number of degrees (*Absolventen*). In 1994, a pool of funds was formed, to which each institution contributes 10 per cent of its core funds for teaching and research. Together with the supplementary funds, this pool was distributed on the basis of the number of degrees (*Absolventen*) per institution. In 1995, the 10 per cent contribution of each institution was doubled to 20 per cent. In addition to the number of graduates, each institution's success in attracting research council funds (*Drittmittel*) and its number of doctoral degrees (*Promotionen*) were taken into account. Drittmittel include Research Council funds, supplied by the German Research Council, and research funds from private sources.

For the 1996 budget, the institutional contribution to the 'pool' was raised further to 35 per cent of its core funds. Two additional variables were included: the number of students in the first through fourth semester (the so-called *Grundstudium*) and the number of academic positions (*Stellen*). The per cent weighting for universities and Fachhochschulen is as follows:

	Universities	***Fachhochschulen***
Absolventen	**35**	50
Drittmittel	**20**	10
Promotionen	**5**	-
Students in Grundstudium	**20**	25
Stellen	**20**	15

The number of graduates (Absolventen) is weighted by the time to degree (i.e. the actual duration of the student's education career), in such a way that graduates with a shorter time to degree receive a higher weight (up to 1.3) than those who take more time. Also there are weightings which vary according to program and faculty.

Rheinland-Pfalz

In Rheinland-Pfalz 5.8 per cent of the higher education budget is allocated by means of a formula. In 1994, for the first time, funds for teaching and research were distributed on the basis of a formula that used the following indicators and weights (per cent):

- students within Regelstudienzeit, plus graduates 45
- professor positions, plus 50 per cent of other academic positions 20
- revenues from research councils and foundations (Drittmittel) 30
- Habilitationen* 2.5
- doctoral degrees 2.5

*A *Habilitation* is a kind of additional degree (promotion, on the basis of research-work) after which a doctoral degree holder qualifies for a professor position.

Subject areas are not weighted, but the number of students in Fachhochschulen is multiplied by 0.8. For 'academic positions', in medicine and engineering there is a weight of 1.5.

Sachsen

For the 1995 budget, in which 5.2 per cent is allocated by means of a formula, the state of Sachsen distributes non-personnel funds for teaching and research according to the following indicators and weights (per cent):

- number of academic positions 30
- number of students 40
- Research revenues 25
- PhD degrees plus number of Habilitations 5

Source: Sekretariat der Standigen Konferenz der Kultusminister der Lander in der Bundesrepublik Deutschland: Differenzierung der Mittelverteilung im Hochschulbereich, October 1995.

The Netherlands

The Dutch higher education system consists of 13 universities, accounting for approximately 35 per cent of student enrolments, and 63 HBO institutions offering higher vocational education (similar to UK polytechnics) accounting for approximately 65 per cent of enrolments. The Government funds the system and is responsible for its macro-efficiency. Quality control is exercised by institutions themselves using external experts, and by the Inspectorate of Higher Education on behalf of the Government.

The current regulatory legislation, enacted in 1993, is based on the philosophy of 'steering from a distance' and enhanced institutional autonomy. *Ex ante* control was replaced by *ex post* control of a more general nature.
The components of funding for the two sectors and the per cent weightings are as follows:

	Universities	***HBOs***
Block grant and other core funds	73	74
Tuition fees	7	
Research Council grants	5	–
Contract teaching and research	15	8

The central block grant is determined by the Ministry for each individual institution. For universities, although difficult to determine, it is estimated that 36 per cent of the core grant goes to cover teaching costs and 64 per cent is for research activities. For teaching purposes the formula allocates two components: a teaching part based on a form of weighted EFTSUs, and an interwoven part which recognises that teaching and research are intertwined and that as a result university teaching is more expensive than teaching in the non-research HBO sector.

There is an element of performance-based funding in the allocations for university teaching in that only students who have been registered no longer than the normal time in their degree program (usually four years) qualify for funding. Further, the core grant for teaching can be reduced if costs exceed the budget made available by the Parliament.

The amount of the interwoven component is calculated as a percentage of the combined amounts of the teaching and the research budgets per university; it effectively represents a 14 per cent 'premium' of the combined amount.

The research component of the core grant to universities consists of three separate parts:

- education-related research, which is dependent on student load and accounts for a maximum of 15 per cent of the research component;
- funding of doctoral programs; and
- strategic research, which accounts for 75 per cent of the research component.

While the Ministry and the universities have agreed that quality and social relevance are to play an important part in allocating this component, in practice no reallocation of funds has yet taken place. An attempt was made in 1983 to have differences in research quality translated into funding decisions, but this was aborted after opposition from the universities. In 1993, however, universities agreed to institute a system of peer review of their research programs on a 6-year cycle. The results will not be used as inputs into Ministry decisions on research funding.

Funding of HBO institutions for teaching purposes is also based on a form of weighted student load and on a 'dynamic demand factor' which relates to dropout and the normal enrolment period for graduates. To that extent it introduces an element of performance-based funding. It is however mainly one way: if stipulated limits are exceeded funding is reduced, but if graduation rates rise there is no reward.

Thus in each sector a form of performance-based funding for teaching operates in that the average length of programs is taken into account. However, by far the larger part of university research budgets continues to be allocated on an historical basis.

There are no plans to use performance-based funding to increase competition between institutions. Rather, the intention is to establish a non-competitive context with institutions being encouraged to improve their own internal situation and with assistance from a special pool of funds established by the Ministry.

Sweden

This section is based largely on a paper from the Swedish Ministry of Education and Science, dated 31 March 1994.

Sweden has six universities, four specialised research institutes, sixteen university colleges (almost all confined to undergraduate education) and eight fine arts colleges. Total enrolment in 1993 was 140 000, with growth by a further 50 000 projected once the new funding system is fully implemented.

Sweden introduced a new resource allocation system for undergraduate education on 1 July 1993. Research and postgraduate education are funded separately. The basic funding principle of the new undergraduate funding system is that money is appropriated as a remuneration for results achieved, in enrolment targets and student progress rates.

About 40 per cent of funding is based on number of enrolments. Target figures are agreed between the Ministry of Education and Science and the university or college. These are not only overall figures but are specified for each of the twelve major fields of study. Institutions are free to enrol beyond these targets but are not funded for over-enrolment.

For each field of study prices are established for each equivalent full time student; the prices are the same for all institutions and based on a special study of educational costs, assuming a 40-week teaching year, 12 hours teaching a week, 30 students in a class in humanities, law and some social sciences. Prices for other fields of study are multiples of this standard (though fine arts is funded by some variations from this formula).

About 60 per cent of funding is based on student progress, or credit points. The academic year is normally considered to be 40 weeks and a successful full year of study corresponds to 40 credit points. Thus an institution which retains all its students throughout the year earns its maximum income. Since target figures for students are set by agreement between the institution and the Ministry, the funding system is not open-ended.

The total amount of money that could be allocated to an institution is based on an Education Task Contract for a three-year period, which is negotiated between the institution and the Ministry. This contract also sets targets for the number of degrees to be awarded in some of the professional fields, such as teachers, dentists and doctors, as well as for the total number of degrees awarded after three years of study. There is also allowance for lump sum funding for special purposes in individual institutions.

The revenues may be used in the ways the institution finds most suitable, within the goals agreed between it and the Ministry.

Features of the system are that it is:

- restricted to undergraduate education;
- retrospective—that is, it rewards institutions for what was achieved in enrolments, retention and graduations in the previous year; and
- controlled by agreements between institutions and the Ministry.

Implementation was facilitated by a transitional year (1993–94) in which all institutions were guaranteed at least as much funding as for the preceding year.

In the view of the Ministry, the reform implies a transition from a resource and cost driven system to a system based on objectives and results. Processes to monitor and evaluate the changes were established at the time the system was introduced.

There is no connection between the results of research evaluations and the direct research funding of universities.

An assessment of the 1993 reforms commissioned by the Ministry said, with respect to undergraduate funding, that the new system has not been in use long enough to make an appraisal and suggests a systematic evaluation in a few more years. None of our informants in Sweden believes that standards are likely to fall due to universities wishing to accumulate additional credit points.

Denmark

From 1994 the budget for the universities contains the following elements:

- a basic grant;
- a grant for teaching;
- a grant for research;
- a grant for other activities; and
- a grant for capital expenses.

There is a basic grant which is the same for all universities: one million Danish kroner (dkr) each. This appears a very small sum, but the Danish system embraces about 110 institutions ranging from 12 research universities to small schools for social workers and midwives, for which the basic grant would be a large proportion of their revenue.

The teaching grant is based on 10 different rates per student according to field of study, ranging from 25 000 dkr to 85 000 dkr per 'active student'. 'Active students' are calculated as the number of passed courses weighted with the standard workload for the individual course. Thus in Australian terms they appear to be a combination of weighted student units and pass rate.

There is no indication of performance measures for research funding. The basic research funding listed above is supplemented by funding from research councils, which one assumes apply competitive and selective procedures.

'Other activities' comprise libraries, museums and other special activities entrusted to the universities.

Teaching counts for some 62 per cent of the total budget for Higher Education and Research; the basic research element counts for 23 per cent and 'other activities' for about 10 per cent. For research universities, research counts for 44 per cent of total grants for teaching and research; when supplementary funds from research councils and other sources are added, this figure rises to 56 per cent.

An interesting aspect is that teaching is funded on the basis of 'active students' and pass rates. This is on the principle that funding enrolments of inactive or unsuccessful students is a waste of resources. The new system means that the university is paid for each passed exam in the financial year. It is 'productivity oriented' and gives the university a strong motive to ensure that the students receive sufficient high-quality teaching to complete in minimum time.

There is an obvious danger that teachers will be tempted to lower standards to ensure funding and ultimately, their own and their colleagues' positions. On the other hand, if students are disenchanted with one teacher or institution they can move to another, taking the funding with them. Within institutions the committees allocating teaching funds have (by legislation) 50 per cent student representation, giving the students substantial influence on teaching quality.

In a covering letter from the author of the paper, the Head of the Higher Education Division of the Danish Ministry says: 'One clear impact is that the universities do not race to enrol students. The fact is that universities are reluctant to admit as many students as our government wants them to'. This reluctance presumably stems from the fact that universities prefer to enrol students who are very likely to pass.

The Danish system has the support of most institutions and academics. There is a general consensus that it has not led to a lowering of standards, although the evidence is of the self-report type rather than independent and quantitative. Denmark is a small (5.1 million) coherent country and any lowering of standards is likely to be discovered and exposed. The use of external examiners for all major university assessments is also a powerful guarantee of standards.

Some institutions report that the system caused them to look at their teaching or at causes of dropping out.

Denmark has a protracted period of studenthood (the basic degree is the masters—nominally 5–6 years, but many students spend 7–8). There are no tuition fees and student grants are available for six years. The drop out rate

is nearly 40 per cent. In this context it can be understood that the Danish Government hopes that the scheme will induce some efficiencies in universities. There is as yet no statistical indication that there has been much change. The Government is now considering more direct interventions to achieve its objectives.

The most common criticism of the scheme is that planning is disrupted because institutions cannot anticipate their income from one year to the next. Small institutions are more vulnerable. The Government is intending to introduce measures designed to buffer institutions from sharp annual changes in funding.

The above section is based on interviews and on a paper *Higher Education and Research in Denmark* dated March 1994, and supplied by the Department of Higher Education of the Danish Ministry of Education as well as material from the Centre for Higher Education Policy Studies.

United States of America

In October–December 1994 Layzell and Carruthers surveyed State Higher Education Finance Officers in the 50 states and the District of Columbia to ascertain whether and how their states were using some form of performance-based funding.

> Of the 40 respondents, 8—or 20 per cent, currently have a performance funding program in place. This includes Minnesota, whose legislature adopted a performance funding measure for higher education in 1994 . . . To date this statute has not been implemented. More than one-half of the respondents (22—or 55 per cent) indicated that their state did not currently have a program, and had no plan to implement one in future. (p. 10)
>
> Of those states with performance funding programs, the proportion of total higher education funding allocated through such programs is relatively modest. This suggests a desire to maintain institutional base funding levels—and thus funding predictability'. (p. 15)

The survey showed that the number of states using quality outcome factors in funding formulas rose from 14 to 20 between 1984 and 1988, but then declined to 10 by 1992 (McKeown & Layzell 1994).

Tennessee

All the American literature recognises Tennessee as the pioneer and most established user of performance-based funding. The Tennessee system is well set out in an article by Banta et al. (1996) in the *Journal of Higher Education* for January–February 1996; there is also a clear brief summary, of an earlier date, in the article by Grady Bogue (1988) cited in the bibliography.

The system is the only performance-based one the consultants know which has been going for so long that it can no longer be regarded as experimental.

> In 1979 Tennessee became the first state to base a portion of state funding for higher education not upon student head count, but on institutional performance, particularly in enhancing student learning outcomes. (p. 23)

In that year the Tennessee Higher Education Commission offered its publicly funded universities and colleges a budget supplement of up to 2 per cent of their operating grants if they achieved certain specified quality measures.

The details of those initial measures are not of great importance to the current project. They have been revised four times since 1979, in 1980, 1982, 1986 and 1991; the longer intervals indicate a growing confidence in the system. The number of criteria has increased from five to ten covering accreditation of courses, assessment of student performance, student satisfaction, external reviews and equity goals (see Appendix 2). The funding supplement available has grown from 2 to 5.45 per cent of operating grant—another indication of confidence in the system.

There are certain key features of the Tennessee system to bear in mind if Australia wanted to go this route. First, the supplement is a bonus; there is no punitive element, institutions do not lose any part of their basic operating grant. Second, the criteria are decided in consultation with the institutions, not arbitrarily laid down by the central authority. Both these features enhance the acceptability of the system to the institutions. Third, the supplement is for improvement of performance; institutions state their goals and the improved targets sought, and receive the supplement if they achieve a substantial proportion of them. In that way the system serves also as a quality assurance mechanism, and Tennessee has maintained its levels of funding for higher education where many other states have cut back. Fourth, the supplementary funding may be spent at the discretion of the institution; it does not have to be spent in the areas where it was earned. All senior executives like discretionary funding, and the system is popular with them. Fifth, the system is not competitive; the supplement is reserved for each

institution and if it is not earned it reverts to the state's consolidated revenue—there is no advantage in maligning one's fellow institution.

The article by Banta et al. is an evaluation of the system, and admits that it is not flawless. In particular, the most recent review and the doubling of the number of criteria have added considerably to the workload of some officers within institutions. Also, even though the system is not competitive, its findings are public knowledge; 'faculty and administrators worry particularly about the potential for misuse of assessment data to make unwarranted comparisons among institutions with different missions' (p. 42).

The Minnesota Higher Education Coordinating Board in 1993 examined the question of performance-based funding and made the following comments on the Tennessee system.

> Despite its political success and individual examples of positive effects, Tennessee's performance-based funding has not transformed the state's higher education institutions. Test scores used in the program have not changed dramatically. Significantly, individual institutions have not used performance funding internally, and at many campuses, depending on campus leadership, the incentives have not been felt by the majority of the faculty who are not directly involved in measurement. Instead the assessment, planning, and reporting have generated their own bureaucracies. Controversy over measures and the appropriateness of different tests reflect continuing doubts about their validity as evidence of educational quality. (p. 12)

Texas

The system proposed for Texas is outlined in the literature review. Both the proposal and its failure to be implemented have aroused some interest in the United States of America. The reasons for the failure to implement were in essence: first, the departure from the state legislature of the leading proponent of the scheme—the remaining members of the legislature had less enthusiasm; and second, the legislature without consultation raised the proportion of funding to be allocated on the basis of performance from 5 to 10 per cent—the educational institutions were not prepared to cooperate with so much at stake. In consequence the state has continued with enrolment-based funding.

Kentucky

The Director of the State Higher Education Executive Officers (SHEEO) made available an information paper from the Council on Higher Education in Kentucky, which is summarised below.

Beginning in fiscal year 1995–96, Kentucky's state-supported colleges and universities will receive all of their funding increases based, not upon the number of students enrolled, but upon the performance of those institutions in selected outcomes-oriented accountability measures. This will form the transition phase from the previous enrolment-driven funding formula to the new performance-based funding model.

The State Governor established a Higher Education Review Commission comprising all university presidents and governing board chairs and selected Governor's staff members, legislators and members of the Council on Higher Education. The Council chair chaired the Commission, which was staffed by the Council and the Governor's Office. The Commission was charged with remaking higher education by focussing 'on specialization, on quality, on performance, on cooperation, and on controlling expenditures'.

The performance measures by which the institutions will be awarded funds will cover five areas as recommended by this Commission, namely: persistence of students; student outcomes; quality of instructional programs; quality of research and/or service programs; and campus management. These five areas are subdivided into a total of 27 individual measures.

Beginning with 1995–96, each university and community college will receive a base amount equal to their grant for 1994–95, the first year of the biennium. The anticipated 3 per cent increase for the second year of the biennium will be distributed according to the performance of the institutions base on measurements suggested by the Higher Education Review Commission.

Since each university has its own unique mission as spelled out in its mission statement, each university was allowed to determine, within certain parameters, its subset of the 27 measures and the assignment of weights expressed as points to each of the selected measures. Each category could be assigned 10 to 30 points, with 100 points the allowable total. This allowed each institution a certain amount of flexibility in determining the relative importance of the five major categories and the individual measures.

The data contained in the institutions' annual accountability reports and the report of the Equal Education Opportunities Committee will be used to determine whether or not each institution has met or exceeded its performance standards in each measure.

For each measure successfully met, the number of points assigned that measure by the institution will be given. The total points given for the measures in each major category will then be added. If the institution's performance score is more than half of the points assigned for the specific category, the institution is awarded the total number of points for the category. If the score is less than that, the institution receives no points for that category.

Thus, successful performance in all five categories is necessary for an institution to qualify for 100 per cent of the performance funding. Successful performance in fewer than five categories qualifies the institution only for that per cent of performance funding indicated by the total points awarded to the institution (e.g. 88 points equates to 88 per cent of appropriation). Any funding not 'earned' by the institutions through performance measurements will revert to the state general fund, thus removing from the process any element of competition for these funds among the institutions.

Use of performance funds is not restricted. The amount each university earns through its performance measurements may he allocated at the respective board's discretion. In addition, these funds, once earned, become unrestricted recurring funds. This represents a first step in a process of developing a results-oriented, performance-based funding model for public higher education in Kentucky.

Chile

In a personal communication dated 11 June 1996 to Professor Jane Morrison of the University of NSW, the Deputy Vice-Chancellor of that University (Professor Fell) writes:

> The novel feature of the University of Chile (and for that matter, the Catholic University of Chile) is the funding mechanism. This is described in detail in a World Bank publication *Higher Education—The Lessons of Experience* (ISBN 0-8213-2745-3). The World Bank particularly commends Chile for its approach to the funding of higher education.
>
> The University receives as a direct operating grant from the Chilean government only 27 per cent of its budget. Students are charged fees ranging from $2000–4000 depending on the course. This represents about 33 per cent of the actual cost. Students can take out loans from the Chilean Government from 10–100 per cent of the cost of tuition and there are scholarships available for students who are unable to pay.

> The particularly unusual feature is the additional funds provided by the Chilean Government for each student enrolled who was in the top 10 000 in the national matriculation examination. 99 per cent of the University of Chile's entering year of 4000 students lie within this band and this results in the attraction of about 30–40 per cent of the university's budget. The remaining funds in the university's budget are tied funds for research and funds to run the university hospital.

Notably, the Catholic University of Chile also receives 27 per cent of its budget directly from the State and a further allocation based on the quality of the students it attracts.

3

Literature Review

A literature search under the descriptors 'Funding; Performance Based; Higher Education' produced 20 citations, not all of which were relevant, (e.g. one on bilingual education for American minorities), and not all of which were available. Other material came from references or was known to the consultants and is discussed here.

In a paper relatively early in the literature, Sizer (1979) argues for 'resource mobility' which involves:

- a 'strength-weakness-opportunity-threats' study of the institution looking to the future;
- achieving consensus on goals and objectives, and performance measures, for the institution and its constituent parts; and
- development of alternative long-term strategies, strategies for short-term financial emergencies, and short-term planning and control systems based on measurable information and performance indicators.

The combination of long-term and short-term strategies, performance measures and resource mobility suggest he is talking about performance-based funding, although he has done little more than present a framework for strategic planning. He does not himself use the phrase 'performance-based funding' nor suggest how to implement it.

IMHE Workshop

In 1991, the Organisation for Economic Co-operation and Development's (OECD) program on Institutional Management in Higher Education held a workshop on performance indicators in higher education and published the papers in *Higher Education Management* (vol. 4, no. 2, 1992). Two papers, one by Spee and Bormans, and one by Sizer, were later conflated and published as a single paper under their joint names in the British journal *Higher Education*; it is that paper rather than the two components which is addressed in this review.

The first of the workshop papers (Kells 1992) is largely historical and narrative, illustrating the rise of interest and shifts in emphasis in performance indicators. It points out that the interest and the use of indicators are highly specific to the political and financial contexts in which the institutions find themselves; there is no one rule for all. Table 1 well

illustrates this. Depending on the conditions within a country (the centre column of the table, modified by the left or right hand column) the interest in performance indicators (PIs) is low or high. Thus in a country where 'adequacy of resources' is high, support and interest in performance indicators is low. Where 'reliance on govenment funding' is high, support and interest in performance indicators is high. And so on.

Kells identifies three general categories of performance indicators that are receiving attention:

1 those having to do with the interests of government in monitoring performance, particularly in certain areas or with respect to certain issues (such as length of studies, access, and gross output);

2 those having to do with teaching, learning or research performance, such as retention/attrition or completion rates, skill mastery, and quality and quantity of research; and

3 those having to do with internal university management, such as achievement of objectives, reactions to or satisfaction with service, workload analyses, cost comparisons and the like. (p. 135)

Table 1 *General Conditions Seen as Influencing the Development of Performance Indicators in a Given Country* (after Kells 1992, p. 137)

High Support for or Interest		***Low Support for or Interest***
low	Adequacy of resources	high
high	Government interest in efficiency, effectiveness and competitiveness of institutions	low
low	Acknowledged autonomy of insitutions	high
high	Acceptance of government steering of higher education	low
high	Belief that differences do and should exist between institutions in access, content and quality	low
high	Reliance on government funding for higher education	low
low	Government interest in a national data base with unrestricted access	high
high	Availability of a reliable national data base	low

The paper also lists some of the controversies the topic has aroused, mostly arising from tensions between universities and governments over the use of

the indicators. A final point which this and other papers in this collection make is the importance of an extensive and reliable data base on institutional performance—in which Australia is regarded as much more advanced than some other OECD countries in 1991.

Sizer et al. (1992) address the different approaches and experiences of Denmark, The Netherlands, Norway, Sweden and Britain.

> When indicators are being used by governments for any form of selective funding, they are frequently seen by the institutions as threatening' because of 'the distaste for the underlying concept of selectivity operated by government ... The role performance indicators play in a particular country will depend upon the political culture, the administrative context, the funding system and the quality assessment procedures. (pp. 133–4)

The authors compare the cultures and contexts of Norway and Sweden, based on equality of treatment of institutions, equality of opportunity for students and equivalence of quality of study programs, with those of The Netherlands and Britain where governments wish to stimulate variety of provision, diversity of institutions, selectivity in funding and implicit quality comparisons. Denmark is said to be in transition from the first to the second culture.

After a brief discussion of the concept of performance indicators they list five core uses of them:

- monitoring developments in the system;
- evaluating the degree of goal attainment;
- dialogue—communication between the parties based on shared expectations of performance in the light of objectives;
- rationalisation—coherent policy making; and
- resource allocation.

Transparency in the use of the indicators is seen as ambivalent.

> The development of indicators may lead to tension if the indicators are meant both to give the institution insight into its own internal operation as part of a feedback mechanism and to provide others with insights to be used for selective decisions (p. 138).

> Information, especially performance indicators, makes it possible for governments to develop a selectivity policy. They are able to engage in 'picking the winners'. Hence the potential winners will be in favour of transparency, the losers won't (p. 143).

Much of the article comprises extensive discussion of the British, Dutch, Swedish and Norwegian situations, without obvious applicability to the Australian scene—not surprisingly, since our culture and systems are different from any of theirs. The paper concludes with ten lessons for improving cooperation between governments and institutions. An extended discussion of these 'lessons' occurs in our critique of the research quantum (Chapter 5).

In the same collection is a paper by Linke which essentially summarises the report he and colleagues had prepared on performance indicators (discussed below), emphasising the complexity of their use and the need for care and sensitivity in application.

After this theorising and conceptualisation it is something of a relief to hear from a highly placed Canadian educational bureaucrat (Lucier 1992) in the concluding paper of the workshop. He begins by commending the conceptual framework set by Kells, Spee/Bormans and Sizer, but then goes on to the atmosphere of the workshop:

> To be quite frank, the atmosphere has been one of caution, caveats and misgivings—an atmosphere that might even be described as highly charged. One gets the impression that some of us have had some rather painful and traumatic experiences, the results of which have coloured the discussions and are quite clearly reflected in the 'ten lessons' accompanying the conceptual framework. (p. 205)

He goes on to argue that there is no dark plot by governments to undermine universities; that accountability is a long-standing and reasonable requirement, and that performance indicators are a mode of accountability now in fashion and likely to grow in prominence; they do not threaten institutional autonomy properly understood; they are not fully developed, and need refinement; and the higher education sector would serve itself better by joining in this activity than in trying to resist it.

> Perhaps the best approach for the higher education institutions to adopt would be to be 'pro-active' and assume a practical leadership function, and perform this with confidence and 'authority'... It would be to everyone's benefit if the context within which performance indicators are formulated and used were to remain a subject on which higher education would also exercise its critical function. This could well be the best way of ensuring that there is no forfeiture or subservience and that discussion of the real issue of quality is not unwisely postponed. (p. 214)

United States of America

An even more pragmatic paper comes from the state of Texas.

H. Ashworth is a Commissioner of the Texas Higher Education Coordinating Board. The paper describes a system which was to be introduced in that state. In the event, the legislature did not proceed to implement it, but the description of the proposal is interesting. Texas has over 35 universities which receive public funding, thus offering a good comparison with the Australian situation. Ashworth reviews the pressures on state legislatures to restrain public expenditure:

> Some of the new wonderments devised over the years to solve budget problems have been Management by Objectives, Zero-Based Budgeting, Program Planning Budgeting Systems, Total Quality Management, and Strategic Planning. Currently the emphasis is on Performance-Based Funding. (p. 11)

He discusses the limitations of performance-based funding. 'Some of those promoting the performance-based approach are hoping to find an ideal mathematical algorithm into which all of the data can be fed and out of which will come a perfect, formularized distribution of resources ... There are two very fundamental problems with this approach': lack of agreement on the values 'that would have to be cranked into such a formula', to say nothing of lack of data; and second, 'massive redistribution of funds could occur every year. Without predictability of income from year to year, there can be no planning. And without planning and effective budgeting, efficiency will quickly take a back seat to intense political efforts by schools merely to survive' (p. 11).

Nevertheless, Ashworth is realistic:

> Whether higher education itself takes the lead in initiating some form of performance-based funding or we wait for it to be imposed upon us, this approach is going to come into use increasingly around the country. I will lay out here an approach to performance funding that can be used to demonstrate to politicians and the public that, through rewards and financial motivation, change can be achieved. At the same time, the approach I propose will not do injury to the central missions of differing colleges and universities. The touchstones for any performance funding system should include availability of data, simplicity, and flexibility to measure performance by different kinds of colleges and universities. (p. 12)

Ashworth describes his commission's first attempt to come up with a performance-based funding scheme involving over 30 measures, some of

which would be applied universally, others from which universities could choose those they wished to apply to them. The complexity of the system rendered it unworkable, and with the legislature pressing urgently for some system, the commission devised something less than perfect, but workable.

> At the sacrifice of some flexibility of the measuring system for different kinds of universities, we finally came upon an approach whose principal asset is simplicity. The tradeoffs in gains in cutting costs, restricting data collection, and reducing the complexity of the entire system make the new approach a clear preference among the universities.
>
> First, the legislature decides, by amount or by percentage of the total appropriations for all universities, how much it wishes to apply to reward performance; this may be additional money or it may be set aside from the total. Then the coordinating board suggests to the legislature a number of possible performance measures from which the legislature chooses those it wishes to reward; the board also recommends weightings for the measures. The performance money is then divided into pools for each measure.
>
> At the end of each performance period the total units of performance for each measure for all institutions would be added together, and the schools would share proportionally in the pool of funds allocated to that measure relative to their performance. That is, every university would compete under all standards of performance. (p. 13)

Ashworth describes the characteristics of the plan:

> Performance funding is based on statewide goals. Each institution can earn performance funding on each of these goals.
>
> Each institution can focus on different goals, depending upon its own role and mission and strategic plan in order to earn performance funding.
>
> The legislature will determine the level of funding designated for each goal. Institutions compete for these funds, and all institutions receive the same reward for a single unit of performance.
>
> The goals and measures cover such a broad mixture that different institutions with differing missions will gain or lose relatively among all universities according to performance on differing measures.
>
> A university scoring low on one or two standards should score higher on others due to the variety among standards. No institution will be left out of earning some of the performance funds available. (p. 13)

The measures applied are all quantitative, even simplistic, such as graduation rates of different groups or dollars earned by commissioned research. Nevertheless, it might be possible to apply the system with more sophisticated measures.

Ashworth urges caution in introducing this or any performance-based funding system, starting with very small percentages of funding at stake until the system is well bedded down. 'After well over a decade of experience with incentive funding, Tennessee now has reached 5.45 per cent of base funding. Any legislative move should start well below that level until the kinks can be worked out' (p. 15). (The Tennessee system is described in Chapter 2 above.)

Ashworth's caution would be supported by an address to the Australian Institute of Tertiary Education Administrators by Ingrid Moses in 1989. Speaking of performance management, she says:

> Meaningful regular *measurement* of performance is impossible. As previously mentioned, academics tend to be intrinsically motivated, and curtailment of the very aspect of higher education which they value, namely autonomy, will demotivate them. Supervision and control, and measurement of performance can only lead to the achievement of short term, low level academic goals. (p. 138)

An acceptable form of performance management, she says, would be identification of an individual's potential and encouragement of it, while seeking by persuasion to align its development with the goals of the institution.

The experience of South Carolina is described in a book by Alan S. Krech which was not available to the project team; however, the abstract provided by the literature search seems worth reproducing:

> This two-part document describes the use of performance indicators (PIs) and presents state guidelines for institutional effectiveness. The first part discusses assessment in South Carolina, indicating that institutions are required to develop measures to assess their effectiveness and prepare annual reports on specific PIs. This part also presents the following principles for using PIs: (1) the factor addressed and its relation to an appropriate goal must be clear; (2) a context should be provided for the PI; (3) diagnostic information should accompany the PI; (4) PIs are most useful when considered in groups; (5) while indicators are increasingly being used to determine institutional funding, the processes may not be sufficiently sophisticated or depoliticised to work; and (6) PIs will not lead to improvements if they are simply used for institutional ranking.

The second part provides guidelines for institutional effectiveness assessments developed by the South Carolina Commission on Higher Education, indicating that assessment is required with respect to general education; student knowledge of their disciplines or majors; performance of graduates on licensing and certification exams; program changes due to external program evaluations; alumni follow-up studies; remedial programs; achievement of transfer students; undergraduate retention and attrition; minority student and faculty access and equity; academic performance of student athletes; library usage; administrative and financial performance; facilities usage; public service; and research.

Australia

In 1986 the Commonwealth Tertiary Education Commission published a 27-page booklet by Paul Bourke which is cited over and over again in the literature, *Quality Measures in Universities*. It is a succinct discussion of the issues, but for the current project its almost unique contribution is that it gives some examples of funding actually being seriously altered in the light of performance. It mentions the Tennessee system which attracts much attention; but in particular it refers to the drastic reductions in university funding in Britain in 1981, which were entirely based on perceptions of comparative quality. 'Criteria such as these [cited by Bourke, p. 5] produced strikingly different rates of budget reduction: Salford 44%, Bradford 33% and Aston 31%, London University 17%, York and Bath 6–7%'. The reduction for the system as a whole was 14–15 per cent.

Although budget reduction was the primary objective rather than instigation of an ongoing program of performance appraisal, this is the most vivid illustration found in the literature of performance-based funding in action. The interesting item about it, apart from the size of the reductions and the furore aroused, is that the cuts were based on quality judgements not about whole universities but about strong and weak departments within them; thus for instance, Salford was not merely told the level of reduction, but where the authorities expected the cuts to be made. That the process and the performance measures were hotly disputed does not alter the fact that here is one clear strong instance of funding being based entirely on perceptions of institutional and departmental performance. The current situation in England is described in Chapter 2 above.

The classic amongst Australian documents is Linke's 1991 report *Performance Indicators in Higher Education*. This canvasses a wide array of possible performance indicators of institutional context, teaching and learning, research and professional services, and participation and social equity. However, when it comes in its final chapter to discuss applications

of performance indicators, it is full of cautions and warnings. In particular: the usefulness of performance indicators depends critically on access to good data; judgements of quality of performance are not likely to come from quantitative data; single indicators are inadequate, and performance is best assessed by simultaneous use of an array of indicators. Echoing Ingrid Moses' address to the Australian Institute of Tertiary Education Administrators (referred to previously), Linke warns there is a danger that

> they will generate a pressure on institutions to direct their performance to the indicators themselves, regardless of what they reflect, rather than to the underlying issues of educational and research excellence ... Another potential and important consequence of applying performance indicators is their tendency to promote uniformity rather than diversity of institutional function. (p. 131)

In Linke's view

> ... they should be used by institutions as a basis for setting appropriate achievement targets—taking account of the range in performance of other comparable institutions across the system as a whole—in accordance with their particular goals, resources and other local circumstances, and for testing their subsequent performance against these targets. In this way too they could be used by the Commonwealth to provide funding support for institutions performing well in particular aspects of their individually agreed role. (p. 132)

Many have urged that this approach be used to reform the Commonwealth's quality assurance program from 1996 on.

The report of the joint DEET–HEC Working Party *Resource Allocation in Higher Education* lists seven possible performance criteria which, it suggests, might be used to augment demographic considerations (student demand) in funding higher education. 'The list is not necessarily exhaustive and others may be suggested' (p. 30). The criteria are:

1 the extent to which agreed school leaver and undergraduate targets have been met;

2 equity group success rates ('measured through factors such as course continuation, graduation and employment or further study');

3 graduation unit costs (though the report mentions the difficulties in applying this criterion);

4 graduate employment outcomes (with similar difficulties);

5 graduate further education outcomes (which might form a composite measure with the preceding one);

6 cost effectiveness of provision ('A full index would incorporate continuation rates, completion time, and graduate outcomes and would require substantial development and consultation'); and

7 quality assessment—'quality [of higher education] as experienced by students and employers. This important criterion ... underpins all other criteria ... The broad descriptors developed by the Committee for Quality Assurance in Higher Education might apply, possibly supplemented by student, graduate and employer satisfaction survey data'.

These might be augmented by the following indicators of efficiency and effectiveness of Commonwealth funding:

8 the commitment of state or territory resources;

9 the support of an existing university;

10 the potential for cooperation with technical and further education;

11 the potential for establishing effective links with industry; and

12 the preparedness to consider alternative/innovative modes of delivery to ensure cost effective provision.

David Warren Piper (1995) has examined the resource allocation practices of some Australian universities and distinguishes four types of funding: capitation, categorical, initiative and incentive. These are four types of Commonwealth funding for the system as a whole, but at least some universities use some or others of them for their own internal allocations.

'Capitation' is funding by weighted student load; when used for internal allocation, the higher a faculty's or department's weighted load, the more resources it receives, principally in the form of staff. Some universities used and some still might use this alone as the mechanism for resource allocation.

This can be modified by allocating a large proportion but not the whole of resources in this way, and withholding some to be allocated on other considerations—giving scope for performance-based funding. Warren Piper uses the example of one university which allocated 85 per cent of available funds on the basis of weighted load and 15 per cent on research performance.

Categorical funding provides money for specific purposes initiated by the 'provider'—such as a new building or a new school or faculty, the 'provider' being the vice-chancellor or small executive group. This is commonly money 'off the top' of the operating grant, used in a developmental way for a limited time for each development. It also is not performance-based.

'Initiative funding distributes money on the basis of proposals initiated by the recipient. There is usually an element of competition'. With this form of funding the provider has the opportunity to specify the activity to be funded. This may be a loose specification, as with ARC or CAUT grants, where the activities are respectively research in any field or form, and innovative teaching in any field or form. The specification can however be precise, such as the CAUT commissioned projects, where the Committee for the Advancement of University Teaching determines the topic of study and calls for bids to undertake the work. Within universities such specificity is rare because usually there is only one unit (department, school, faculty) equipped to undertake a given activity.

This could be regarded as a type of performance-based funding because the recipient receives the funds in recognition of reputation (based on past performance) and likely future performance. However, the actual performance is rarely subjected to the same systematic appraisal as the proposal, although publication itself can be an indicator of quality, e.g. in peer-reviewed journals. It involves principally an expectation of performance, and commonly some funds are withheld until the initiative has been completed to the satisfaction of the provider.

'Incentive funding implies the payment of supplementary monies on the basis of attainment rather than proposals. This form of funding can be used to reward good practice rather than achievement. Inevitably performance indicators are involved'. This is performance-based funding par excellence, and Warren Piper points out that it is not necessarily competitive.

He uses the example of the Tennessee scheme to illustrate that the potential of a few per cent loss is sufficient to drive the quality agenda in Tennessee, and we have seen how the prospect of small percentage gains (but considerable prestige) has driven the quality agenda in Australia.

Warren Piper concludes that 'if we are to use a range of funding mechanisms, and they are to include performance related funding, then it is as well that they are used knowingly and planned as a whole rather than installed as separate responses to a variety of problems or opportunities'.

Ontario, Canada

Ontario, Canada, has a Council of Ontario Universities; a Council on University Planning and Analysis; a standing committee of the latter council, the Committee on Accountability, Performance Indicators, and Outcomes Assessment; and a Minister's Task Force on University Accountability. In 1992 the Minister's Task Force asked the Committee on Accountability, Performance Indicators, and Outcomes Assessment to devise and propose a

series of indicators that would be made available to university boards of governors as a means of improving accountability. Having produced a report to the Task Force in 1993, the committee continued to revise and devise indicators in response to further requests and suggestions, and early in 1994 the President of the Council of Ontario Universities (COU) asked the committee to undertake the COU Indicators Project.

The committee has produced its proposal, developed from the revised report to the Task Force through a series of iterations which amounted to a simplified Delphi process. It proposes fifteen core indicators, of varying degrees of interest to: students/parents (s/p); government (g); public at large (p). These indicators are:

• distribution of entering grade averages	s/p	g	p
• acceptance rate—undergraduate first entry		g	
• acceptance rate—professional second entry	s/p	g	p
• research yield		g	p
• research grants and contracts as percentage of operating revenue		g	p
• total library spending per FTE enrolment	s/p	g	p
• student retention, attrition, progress	s/p	g	p
• space allocation		g	
• space utilisation	s/p	g	
• time to graduation (by gender)	s/p	g	p
• class size	s/p	g	p
• ratio of sections (groups) to classes	s/p	g	p
• percentage of classes with sections	s/p	g	p
• availability of part-time programs	s/p	g	p
• employability (indicator to be developed)	s/p	g	p

The committee's report to the Task Force, from which these core indicators were distilled, contains a much longer and more detailed list of indicators.

It must be noted that these are indicators to assist in accountability, not in assessing educational performance; for instance, questions of space allocation and utilisation do not loom large in Australian judgements of performance, while equity considerations (which do loom large in Australia) do not figure in the Ontario list.

It is noteworthy also that these indicators are all quantitative; there are no measures of student, staff or employer satisfaction or other criteria which could be discovered only by survey. That makes the indicators relatively easy to use, but they are not claimed to give a complete picture.

> The selection of core indicators with particular audiences in mind must not be construed as a rejection of other indicators. (*COU Indicators Project Interim Report*, p. 4)

> In practical fact, accountability, indicators, and qualitative reviews are—or, at least, should be—part of a single design and should be portrayed to the public, including government, in that way. The COU Indicators Project should not leave the impression that indicators are the sole means of accountability and of expressing the role and performance of universities. (p. 9)

There is no indication as yet that Ontario has actually moved to performance-based funding based on these or any other indicators.

Equity Indicators

The Ontario documents do not appear to address issues of equity and there are no indicators of performance in that area, which is one of considerable concern in Australia. The classic discussion of equity performance indicators is in *Equity and General Performance Indicators in Higher Education* (Martin 1994), a study funded by DEET's Evaluations and Investigations Program. This defines more precisely the six equity groups broadly identified in *A Fair Chance for All*; it uses (and explains) the three concepts of threshold, reference value and institutional target to measure performance in terms of the values of the indicators; and it identifies four performance indicators—access to higher education for equity groups, participation by group members in higher education compared to their proportion in the State population, student progress rate as defined in *Performance Indicators in Higher Education*, and apparent retention rate. Trials showed that these indicators work well for four of the groups, with scope for improvement respecting two groups (Aboriginal and Torres Strait Islanders and people with disabilities) and least usefully for students of non-English speaking background.

International Comparisons

Cave and Hanney attempt to draw together the whole picture of performance indicators and their uses in their article on the topic in *The Encyclopedia of*

Higher Education (1992). This article, like the rest of the European literature, is strong on theory and discussion and very light on actual instances of performance-based funding. It mentions, without details, 'the examples from Northeast Missouri and Tennessee', but gives more information on

> policies developed by the Board of Regents in Ohio, which have enhanced the use of PIs. A new policy in 1983 was aimed at increasing the quality of higher education so that it would provide a resource for stimulating economic revitalization. In order to identify the centers of strength that were to receive the extra resources, use was made of the full range of PIs, including those related to reputation, inputs, outcomes, and value-added. (p. 1419)

The article says of performance indicators that: their use in Germany, to stimulate competition, has failed; that in The Netherlands 'implementation has proved difficult'; in Finland 'there are difficulties and limitations at the technical level'; in Britain they 'still have to be developed into a system of budgeting and accountability at the responsibility centre level'; and in Australia they were still under study at the time the article was written (pp. 1420–21).

The article concludes by emphasising the complexity of the issue and the need for sensitive use of performance indicators, including the observation:

> A system which directly rewards institutions which perform well on average may also fail to direct resources to areas where they would have the greatest marginal effects, which may be the institutions with the worst performance. (p. 1422)

4

Performance-based Funding within Australian Universities

Survey of Performance Funding within Universities

Introduction

Part of our brief asked for a survey of the use of performance indicators as a basis for distributing funds within universities, primarily to faculties or schools. For each of the three areas of research, teaching and equity respondents were asked to nominate the sub-program or activity that was subject to performance-based funding, the institutional level at which it operated, the amount of money at stake, the percentage of the program that was subject to performance-based funding, any limits on annual budget variation and evidence of impact of performance-based funding on behaviour.

Vice-chancellors were informed of the survey and asked to nominate a contact officer who would receive the questionnaire.

Of 36 institutions approached, 21 provided information, one declined to participate, one reported no performance-based funding activity of any sort, and 13 did not respond or replied too late to be included in the analysis.

For example, a few universities include equivalent full-time student units (EFTSUs) or other measure of student load as a performance indicator. The University of Western Australia stated that it 'does not regard EFTSU simply as an input factor, but as a composite measure of input, throughput and output; as such we regard the use of EFTSU to be a legitimate element in performance-based funding'. Other universities regard the level of tertiary entrance rank (TER) among students recruited as a performance indicator and reported that rewarding high or improving tertiary entrance ranks had stimulated faculties to greater efforts in this regard. Similarly the linking of funding to the number of graduate research students was reported to have caused faculties to take a greater interest in honours enrolments, retaining students and preventing dropouts.

Two or three universities reported using an indirect linkage of indicators and funding; that is, rather than a formula automatically determining funding, a committee of review examined a range of indicators for each main course

and decided on what action would make sense in the circumstances. (For example, see Royal Melbourne Institute of Technology.)

The funds at stake varied from all of the base funding for a major program down to one or two per cent of base funding. No rationale was given for deciding on the amounts chosen but we noted that quite small sums were often regarded as sufficient to lever a substantial response.

Nearly all universities use indicators of performance for distributing funds for research, in most cases these are the main elements in the composite index: dollars won in competitive grants, publications and postgraduate research degree enrolments or completions. Four universities use indicators of teaching and learning, and several reported that they are planning to do so. Two use performance-based funding to reward equity programs.

Research

Of the 21 universities which replied to the survey all but one reported using some research performance measures as a basis for distributing part or all of research funds to faculties or schools. Eight of these also reported that distribution within faculties or schools used performance measures.

The most common indicator was publications or research funds won in competition. Apart from these, some universities reported using referees' reports, postgraduate research degree completions or conference papers. Two universities, Wollongong and Edith Cowan, reported using their own composite formula which differed significantly from the research quantum. In the case of Wollongong the 1997 budget is to be distributed by a comprehensive formula including many indicators of teaching and research derived from the Linke Report (1991).

In about three quarters of the universities all, or almost all, of the funding for research is linked to performance. It was reported that this led to a heightened awareness among staff of the source of funds and stimulation to win grants and publish frequently. A low priority to teaching was revealed by the observation that: 'a share of the RQ enables the purchasing of teaching relief'. There were some comments that a rigid formula inhibited adequate responses to changing circumstances; and that rewarding the winners tended to cause neglect of departments that may need help. The 'social limits to growth' phenomenon was implied by one department with ten years experience of performance funding which pointed out that when all become skilled at winning points the marginal advantage will have disappeared.

The responses are as interesting for what is not mentioned as much as they are for what is. Whereas there is almost universal reporting of increased research activity (applications for grants and publications), there is no reference to improved quality of research and only indirect reference to the impact that performance indicators have on the choice of research questions and topics.

The following is a representative selection of positive and negative comments.

- The introduction of a Research Activity index in 1993 has provided an incentive for staff to seek external funding for research projects and [to] focus research output on DEET publication criteria ... the effect, after the first year, is that all academic staff and some non-academic staff now have greater motivation and drive toward research outcomes and performance. They have an opportunity to gain funds for further research, based on performance in the previous year, without having to submit a proposal for such funds.

- The Mechanical Engineering Department rewards publications by allocating one third of its share of the RQ to staff members with an upper limit of $10 000 per member. Most at [this campus] get this. The Scheme has inspired a similar scheme in Maths department.

  Allocation of 50 per cent of RQ to faculties as earned has increased awareness in faculties that their research performance would impact on their income from RQ and RIBG [and of the] importance of reporting accurately research performance data to administration.

- Reporting of research outcomes to DEET has improved. To date the current models would appear to have met the university's need to provide funds to those faculties actively involved in research. As a post-1987 university we are now looking to move away from ... indicators such as staff and student numbers [to] focus more on research outputs ... PBF has enhanced annual publications output; [stimulated] recruitment of higher degree students; encouraged staff to upgrade qualifications; increased applications for funds.

- ... performance based funding to departments has gained acceptance of all academics in faculty, especially in terms of recognition and receiving funds based on efforts made. Research quantum earnings are distributed directly to departments making those earnings [available] for use in further research activity, e.g. travel costs to conferences and archives, teaching relief to enable more research productivity. (Arts and Social Science)

Traditionally funding in the University was based on historical model. Now all funding is based on performance of one form or another (teaching load, research output, etc.) the change is a very positive one since it directly links funding to achievements. The scheme has been accepted without difficulty. (Engineering)

- The net effect of this approach (since 1994 the total RQ earned is distributed to schools as earned) has been to assist in getting School staff to understand the factors which determine allocations. Schools are allocating more on performance basis as a result. Staff are now becoming more aware of how success in research grants, publications, supervising research students ... impact on School viability. (Applied Science)

  The $1000 per large grant submission has seen a dramatic increase in the number of new applications. (Professional Studies)

- PBF has been used in the Biological Sciences Group for eight to ten years now so that departments are used to it and accept this approach as probably being the best compromise for distributing funds at this stage.

  In general there is good support for the Group's formula and its continued use because departments: understand the formula; know what they have to do in order to maintain or increase their income; and accept the need for and benefits of competition. The use of a formula also provides a degree of funding certainty for all departments because it removes any concerns of bias that may exist where a significant part of funding is allocated on a discretionary basis.

  The formula used in this Group to distribute funds to departments is recognised as having two major disadvantages, namely:

  —It discourages co-operation between departments and centres which is contrary to what is often desirable and, indeed, necessary. This can adversely affect relationships, teaching and research and the different use of resources. Within the ... Group however, there is a substantial degree of balance and cooperation between the units ...

- The formula is essentially inflexible which prevents or at least limits the ability of the Group to adjust funding to meet changing circumstances, including the provision of significant support for new initiatives or to departments needing assistance.

> The incentives have worked well in raising publication rates but less well in other areas. The exercise works well to stimulate competition and reward the successful. If all practitioners become adept at operating, marginal advantage becomes slight. (Humanities Group)

- Greater awareness of the importance of research in the mission of the university; greater sensitivity to the needs of industry/private sector as this is seen as source of new R&D funding.

Teaching

Four of the 21 universities reported use of indicators of teaching performance for the distribution of funds to faculties and schools. In most of these the scheme is in its infancy, the funds at stake are minimal and there is insufficient experience on which to base any evaluative comments. Two of these universities also reported using performance-based funding for some distribution from faculties or schools to departments. Several other universities reported that planning on teaching indicators is advanced with the expectation that use will be made of them in the near future.

The indicators being used or considered included retention rates, graduation rates, some course experience questionnaire (CEQ) scales (either absolute or improvement scores), students' feedback on the quality of teaching, graduate employment statistics and the quality of students recruited Tertiary Entrance Rank (TER) scores). It is arguable whether the last is a performance indicator, but institutions reporting its use referred to the stimulation of faculties to improve the quality of undergraduate recruits. This of course may contribute to the quality of graduates, but it does not impact on the quality of teaching and learning except insofar as a 'critical mass' of able students can lift the performance of a whole class.

Rewarding the number of students in postgraduate courses was reported as causing faculties to look at ways of enhancing undergraduate performance and increasing honours enrolments.

Respondents made no reference to the 'value added' problem, but this would be likely to receive attention if there were to be serious competition for funds based on indicators of teaching and learning. A value added programme, yet to be adopted, is being developed at La Trobe.

Equity

Three of the 21 universities reported using performance in the achievement of equity objectives as a basis for distributing funds. Southern Cross University reports that about half of the $100 000 for equity is allocated on indicators of access and participation success.
The University of Newcastle has a detailed equity plan which includes the following performance indicators: access; participation (e.g. per cent of women in engineering courses); participation in higher degree research; participation in higher degree coursework; success; and retention. About half of the funds for equity programs are subjected to performance.

> PBF has primarily been used to support programs which impact on student numbers and hence DEETYA funding. Once the financial implications of the program have proven to be positive, they have been targeted for the mainstream funding envelope. It has proved much harder to mainstream those activities which cannot easily be proven to have a positive financial impact.

Evidence of the impact of performance-based funding at Newcastle includes: regular monitoring, review and policy development, a high number of pilot programs, a high degree of innovation and mainstreaming of successful programs. Newcastle has a national reputation for its equity programs.

Conclusion

The use of indicators of research (grants, publications, PhD students) for internal distribution of funds is fairly well established in Australian universities. The advent of the research quantum for systemwide distribution has stimulated this internal distribution. By and large, respondents to the survey report acceptance of the arrangement and satisfaction with it. In particular staff have been motivated to actively seek grants and to publish.

A minority commented on the work involved in collecting information on publications; and on adverse effects on collaboration across departments and teaching. Criticisms of the unnecessary complexity of the composite index were also made by participants at a special workshop run to discuss the interim findings of the project.

Indicators of teaching or learning quality are as yet used very little within institutions although the idea is under active consideration in a number of places. One of the problems is a belief that there are no reliable or valid indicators available. In fact, it is probably easier to measure quality of teaching and learning than it is to measure quality of research. Some

universities are aware of the substantial contributions of Linke and Ramsden to this topic. The Higher Education Funding Council England is well advanced in an ambitious exercise of peer assessment *(Report on Quality Assessment 1992–1995)* and the CQAHE's approach to institutional self-assessment discussed a number of indicators of teaching and learning. These are summarised in Chapter 6 below.

Equity objectives within institutions and faculties have received even less attention than teaching and learning. It is, however, a relatively straightforward matter to calculate the graduation rates of students in equity categories and, if comparisons are to be made, to apply a value added correction.

There are some advantages of applying performance indicators at institutional or sub-institutional level. First, distortions due to measuring and averaging disparate activities are less likely to occur. Indicators that are not reliable or valid can readily be identified and dropped from the formula. Second, within institutions, faculties and departments there should be a good knowledge of the processes which lead to good or poor performance and are associated with system-wide performance funding.

The value added phenomenon is likely to be more readily dealt with within than between institutions. The concept of making allowance for variation in inputs is important if outcomes are to be compared in any meaningful way. But making appropriate statistical adjustments is not a simple operation and this is probably the reason for there being no instance of the value added concept being used at system level. Within institutions, however, it should be readily possible to use the value added concept in comparing, for example, the learning outcomes over time or across departments where there have been significant fluctuations in the overall quality of entering students.

5

Performance Measures: The Research Quantum

Introduction

The core funding of Australian universities for research purposes is now almost entirely performance based. This is a major turnaround from the situation a decade or so ago. Then, core funding of research was implicit and effectively confined to the group of 19 institutions comprising the pre-1987 universities.

The change to a performance-based approach applied system wide came with the introduction of the Relative Funding Model in 1990, and the delineation of separate teaching and research components of the operating grant. The research related component of the model was defined as 'the quantum of the operating grant used to support research activities other than those inextricably linked to higher degree research training' (*Assessment of the Relative Funding Position of Australia's Higher Education Institutions*, p. 13). The research related component or research quantum notionally therefore covered the infrastructure costs associated with research funded internally and also externally funded research where the grants concerned—as in almost all cases—did not meet full costs.

In the Relative Funding Model, the teaching component accounted for 94 per cent of the available operating grant and the research quantum, 6 per cent. The teaching component was distributed among institutions on the basis of weighted student load, a measure combining student numbers, discipline weights and levels of study. The research quantum was distributed on the basis of an index of income gained from National Competitive Research Grants (NCGs). Thus, the total operating grant for an institution represented the sum of its allocation from the teaching component and its allocation from the research quantum.

From the perspective of the 19 pre-1987 universities in particular, the research quantum was viewed as a 'clawback'. That is, funds that had previously been provided on an historical basis to support their research activities were now being withheld and subsequently redistributed through a competition open to all 36 institutions in the unified national system.

While the Relative Funding Model report made mention of reviewing the distribution of the research component of the model as soon as practicable, the research quantum was not subsequently redistributed until 1995. At the

same time, in the 1993–1994 budget context, it was recast as a defined quantum of funds rather than as a proportion of the operating grant. For 1996, the research quantum of $218.6 million comprises 4.9 per cent of the total operating grant.

From 1995, the index used to distribute the research quantum has been broadened into a Composite Competitive Index. Besides National Competitive Research Grants, the composite index takes into account success in gaining research grants from industry and public sector sources other than the Department of Employment, Education, Training and Youth Affairs; it also includes measures of research output in the form of publications and research degree completions. The change to the index, including the phased increase in the weight allotted to the output measures, might be said to make it more fully a *performance*-based funding measure. The point here is whether success in gaining research grants is strictly a performance indicator, given that what is being assessed is a research proposal, not a research performance. The counter point is that the proposer's track record or past performance is an important consideration in a competition in which only one in five new applications are successful.

Whatever the niceties of that argument, the research quantum was the first and remains the only mechanism used to allocate core funds on a competitive basis according to transparent indicators of performance. Other centrally administered programs with a performance orientation used supplementary funds, e.g. Quality Assurance, Equity, Research Infrastructure Block Grants. The portion of the operating grant which was withheld to constitute a pool of discretionary funds (the National Priority Reserve Fund) was allocated according to need, or on an application basis, rather than on the basis of performance.

How well—that is, how effectively and efficiently—has the research quantum served as a performance-based funding measure; has it influenced institutional policy and research behaviour; does it reward research excellence? There has been no formal evaluation of the research quantum in these terms; the following critique is based on available data and policy perspectives.

It is important to note at the outset that the quantum is part of the operating grant received by institutions. The way in which institutions internally allocate their funds for research is entirely a matter of their own discretion. The survey reported in Chapter 4 suggests that the majority of institutions use the Composite Competitive Index for internal distribution; that is, income from the research quantum is distributed among faculties, etc. on the basis of their relative standing on the index.

The Effectiveness of the Research Quantum

Initial distribution of the research quantum, using historical data based on success in gaining national competitive grants, was not unexpectedly heavily biased in favour of the longer established universities. The 1994 quantum was the last to be allocated on the basis of the NCG criterion alone. In that year's allocation, 13 institutions—all of them pre-1987 universities—received a greater share of the research quantum than they received of the total operating grant. The remaining 23 institutions—including all 17 of the new post-binary universities, and the other six pre-1987 universities—received a smaller share of the research quantum than they received of the total operating grant.

The addition, from 1995, of indicators relating to other sources of external funding and to research outputs, to comprise the composite competitive index, was expected over time to produce some change in the distribution. In the latest allocation of the research quantum, that for 1996, however, the above pattern is maintained. Twelve of the original 13 universities continued in 1996 to earn a share of the research quantum that exceeded their share of the total grant; the 24 remaining institutions comprised the 17 new post-binary universities and 7 pre-1987 universities.

While there was negligible change in the pattern between 1994 and 1996, there was change in the expected direction in institutional shares of the research quantum itself. Twenty-two institutions received a proportionately greater share of the 1996 quantum than they had of the 1994 quantum; the remaining 14 institutions received a smaller share. The 22 gaining institutions included 16 of the 17 post-binary universities and 6 pre-1987 universities; the 14 losing institutions in this case comprised 13 pre-1987 universities and one new post-binary university. (The latter suffered by far the smallest loss of the 14.) These changes in distribution of the research quantum are likely to be accentuated when the new Composite Competitive Index is fully phased in.

Another way of considering the effectiveness of the research quantum is to examine how it spreads the available funds over the sector as a whole. An appropriate measure of spread in this case is the quartile distribution; that is, in the system of 36 institutions, what proportion of the total research quantum is won by institutions with the nine largest individual shares, by the next nine and so on? The results for the 1994 and 1996 quantum distributions are shown in Table 2.

Table 2 Quartile Shares of Research Quantum

Quartile	*1994*	*1996*
First	**74.18**	69.32
Second	**20.50**	19.35
Third	**4.95**	9.09
Fourth	**0.37**	2.25

Again the compositional effects are strong. The top quartile in each year's distribution consists entirely of older established universities, and between 1994 and 1996 there is only one change in the identity of that group. The bottom quartile in each of the two years consists of new post-binary universities, with only two changes in identity between 1994 and 1996. In 1994, with one exception, all pre-1987 universities were to be found in the top two quartiles, and with no exception all new post-binary universities were to be found in the bottom two quartiles. (Note that, as pre-1987 universities numbered 19, not all could be contained in the top two quartiles.) By 1996, a second pre-1987 university was included in the second half of the distribution and two new post-binary universities were included in the top half.

The effects, both of the improved research capacity of the newer universities and of the change from a single to a composite index, are more clearly reflected in the shift in the shares won by corresponding quartiles between 1994 and 1996. The top quartile and to a lesser extent the second quartile received declining shares between 1994 and 1996; the third and fourth quartiles each received increasing shares. Again these directions of change—although not necessarily their rate—can be expected to continue as the Composite Competitive Index is further phased in and the element of financial protection to institutions facing a significant drop in their allocation is phased out.

Clearly, the research quantum is operating to redistribute funds on the basis of performance in open competition, although outcomes remain strongly linked to the institution's pre-1987 status.

Other, more qualitative, assessments of the effectiveness of the research quantum can be based on its degree of acceptance and on how closely its operation reflects the principles suggested by Sizer et al. (1992).

To the extent that the research quantum in its present form is accepted by universities, this no doubt reflects the degree of consultation and collaboration between government agencies and sector and institutional bodies in the process leading to its establishment. It probably also reflects the fact that by 1996 all institutions were receiving some income from distribution of the research quantum. Despite their relatively slim pickings

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to date the newer institutions may see their mere participation in the competition as legitimating their research role.

The extension of the index into the area of research funding from non-NCG sources and into the publication arena has added substantially to the burden of data collection and verification. Most institutions appear willing to tolerate these extra burdens in the interests of improving the face validity of the program, although some remain sceptical on the score of cost-effectiveness.

There is a reasonable degree of acceptance also of the increased weight attributed to output measures. Problems remain, however, over the verifiability of the publications data and over the possible inclusion of income from consultancies that are not strictly research based. Attempts are being made to address these issues. The transparent character of the index and publication of the details appear to have gained acceptance on the basis that all institutions feature in the distribution and can use the outcomes positively where applicable to point to their own rate of improvement in research performance.

The effectiveness of the research quantum can also be assessed against the ten principles set out by Sizer et al. (1992) for improving cooperation between governments and institutions in the development of performance indicators. The principles are numbered below, with each followed by comment on Australian experience with the derivation and use of research and related performance indicators.

1 'It is important for a government to spend time clearly specifying and communicating its objectives and policies for the higher education system prior to discussing with institutions the development and use of a system of performance indicators.'

Publication of the 1988 White Paper, the access and equity framework contained in *A Fair Chance For All*, the Ministerial Statement on 'Quality and Diversity' and the Higher Education Council's follow-up advice *Achieving Quality* represent attempts by Government to spell out objectives and policies for the higher education system. With regard specifically to research, some attempts were made to delineate policies and identify priorities. At the same time a cooperative project was initiated on the development and trial of a system of performance indicators (the Linke project). While most of the indicators developed through that project have a generic character and while there is no necessary connection between particular indicators and specific thrusts of government policy, both central agencies and institutions themselves have made increasing use of indicators to evaluate performance and reward achievement.

2 'Government should stimulate discussion with institutions to encourage identification of institutional objectives in the context of government policies so as to identify areas of agreement on criteria for assessing achievements. Whilst both parties must identify objectives and policies, they should accept that complete goal congruence between government institutional objectives and policies is unlikely to exist or to be achievable.'

Through the profiles process, institutions were encouraged to develop research management plans which included statements on institutional research objectives. Government policies on research in higher education were not set out in any clearly articulated, integrated way but were implicit in funding programs. In the Quality Review rounds, institutions were expected to show how their mission and objectives related to the goals of the system as articulated in *Achieving Quality*. Research goals were not fully treated or elaborated in this context. Despite this, Government and the sector reached a degree of consensus on the appropriate indicators and criteria for assessing research performance, as exemplified in the Linke project and the research quantum. It remains possible for individual institutions and government to have differing views on research objectives and priorities; not all institutions use the Composite Competitive Index for internal allocation purposes.

3 'It is important for a government at an early stage to explain fully to institutions the uses it intends to make of performance indicators as part of the process of securing institutional acceptance of their use for assessing achievements.'

While government has not consistently followed this precept, the process leading to development of the Composite Competitive Index well reflected it and was a major factor in its acceptance.

4 'It is important to invest time and resources on developing jointly with institutional representatives a sound conceptual basis of subsequent development, including defining the nature, purpose and limitations of each indicator.'

The Linke cooperative project on performance indicators in higher education was set up with this in mind. It went to considerable length to define the nature, purpose and limitations of each indicator, including research performance indicators, and where appropriate, to distinguish performance indicators from measures of quality.

5 'To build a reliable database, it is important to start from the needs for data within institutions in order to secure an interest and active participation in the development and operation of the data base. Government should be willing to give priority to the institutional

management aspects of higher education, allow time for the development of new integrated information systems which will meet institutional and national data needs, and make a fair contribution to the cost.'

The DEET–AVCC Working Party on statistics in higher education adopted this approach to a reasonable extent, even though the design of a systematic national data base was its primary consideration, rather than the needs for data within institutions. The specifications for research data were made thoroughly consistent with those used by the Australian Bureau of Statistics in its wider collection of Australian research data.

6 'In order to lessen tensions that may arise in diverse and selective systems, it is a prerequisite to make a distinction between the information requirements of different levels of management (faculty, institution, and national), and accept that not all management statistics in the national database should be available for use by national bodies. Some should only be available for use by institutions and within institutions.'

While Australia does have a reasonably diverse system of higher education, it does not restrict access to any management statistics in the national database at present. In the interests of facilitating benchmarking and identification of good practice, it seems unlikely that it will do so. This does not prevent institutions from collecting supplementary data for their own internal management purposes.

7 'If the funding model is based on equality of opportunity, funding and comparable quality of institutions and courses, when proposing the development of a system of performance indicators for a higher education system in transition towards decentralisation emphasise the primary purposes are:

- to assist institutional managers in more effectively and efficiently managing their share of national resources for the benefit of faculty and students; and
- to provide relevant and reliable data inputs into a national model for funding institutions which takes account of regional and special institutional factors.'

Australia has some way to go yet to achieve these purposes. As indicated in 5 above, the preoccupation to date has been with setting up a national database. The recommendations set out in the Hoare Report for improvement in the management of institutions may produce a change in emphasis. As to the second of the above points, regional and special factors have not been explicitly incorporated into the development of a system of performance indicators but rather have been left to end-of-the-day judgement. Affected institutions have recently begun to renew their claims for special funding consideration.

8 'Involve institutions in the review of existing or the development of new resource allocation models. Be willing to make the resource allocation model transparent and open to constructive criticism and dialogue.'

This was the basic approach taken in the development both of the Relative Funding Model and the composite index.

9 'Recognise that comparable teaching quality assurance systems informed by agreed performance indicators are best developed by the institutions if their ownership is to be secured or ownership is vested in an independent body. If however, comparable quality assurance systems are developed by government, concentrate on the collection of qualitative information and on control of the institutions' quality assurance procedures.'

This precept applies specifically to the teaching function. The CQAHE 1994 review of teaching and learning blended institutional self-assessment of quality assurance processes and outcomes with its own use of publicly available performance indicators and input from review teams.

10 'It might be both natural and necessary that government starts the process of developing a national system of performance indicators by stressing the overall demands of the sector, and afterwards leaves it to the institutions of higher education to develop proposals on how the institutions will fulfil the demands.' (pp. 145–149)

This approach typified the development of educational profiles. It has been applied less formally to date to the development of a system of performance indicators.

Efficiency

The basic question here is whether the outcome achieved, in terms of the distribution of the research quantum, is commensurate with the effort involved. The effort is principally that of data collection and, increasingly, of data verification in order to produce a valid and reliable index. The marginal additional effort of data collation and resource allocation at the centre is ignored for the purposes of this analysis.

The burden of data collection and verification clearly has increased substantially with the advent of the composite competitive index. The most heavily weighted element—National Competitive Research Grants—continues to be the most easily verifiable and least open to interpretation. It also clearly has high face validity. Nevertheless, there has been criticism of the weight retained by the NCG element despite its recent moderation.

Preston (1995) argues that universities with a high proportion of their research funded from industries and areas of society not served by NCG programs are significantly disadvantaged in the competition for research quantum and research infrastructure block grant funds. She points out that National Competitive Research Grants of non-ARC origin are effectively being subsidised by these funds. In the interests of greater equity and efficiency and less distortion of financial allocations for research, she suggests either that National Competitive Research Grants be given less weight, or that more NCG programs be developed in those industries and areas of society not presently served by them, or both.

The two remaining income elements in the composite competitive index—research grants from industry and from other public sector sources—are of a lesser order of reliability than the NCG elements in that they are open to error arising from the mis-classification of income from consultancies. It is possible in some statistical returns that income from non-research based consultancies is wrongly included as research income; it is also possible that some returns fail to include income from legitimately research-based consultancies. The cost to the higher education system of conducting its own verification procedures in this area would be high, but could be lessened if the relevant industry and public sector sources agreed to maintain systematic records of research grants awarded to higher education institutions and to make these available to the Department of Employment, Education, Training and Youth Affairs. A further issue is that the accessibility of industry and other public sector research grants is liable to be more closely bound up with institutional location and academic profile than is the case with National Competitive Research Grants.

For these reasons the lower relative weighting accorded to research income from industry and other public sector sources is justifiable. The extent to which inclusion of these elements, at their current weights, is capable of distorting the research agenda in institutions is a moot point given that diversification of research income has been adopted both by Government as a policy objective and by institutions as a self-betterment strategy. The real issue of distortion in these cases lies rather in control over choice of research questions and the rights of publication.

The research degree completion indicator is the least weighted element and presents few problems of verification. Its low weight is appropriate on three counts. First, it is highly correlated with the income and publications indicators. In the 1996 distribution, it had a rank order correlation of .88 with income and .91 with publications (Stokes & Garbellini 1996). Second, research higher degree load is already funded through the operating grant. Third, number of completions is highly correlated with institutional size. With its low weight it is unlikely of itself to distort behaviour in institutions, the rapid growth of research degree enrolments having clearly preceded the introduction of the composite competitive index.

If a research degree indicator is to be retained as a component part of the composite competitive index, consideration could be given to basing it on completion rates (or a time-to-completion indicator) once enrolments are sufficiently large to produce reliable measures of these indicators for individual institutions.

The publications item is ostensibly the least efficient and reliable element in the composite index because of the high cost involved in data collection and the difficulties of verification it presents. Its capacity to make an independent contribution to the research quantum outcome is limited by the extent of its correlation with other elements, .94 with income and .91 with completions.

Even when collected and verified, interpretation of the publications data remains problematic in the context of developing an approach to rewarding research quality. The mere frequency counting of lesser known, more ephemeral publications, papers and performances seems unlikely to contribute to quality outcomes in a situation where there is even reason to doubt the value of citation analysis of major publications as a guarantee of quality (Bourke & Butler 1995).

The publications element is perhaps the one most likely to produce distortion of research activity within institutions striving to increase their share of the quantum. In the 1995 Quality Review round it was observed that for internal research funding purposes some institutions appeared to give inordinate weight to publications at the expense of other indicators of research activity.

The recent decision to peg the publications indicator at its present weight in the composite competitive index, rather than to increase its contribution as proposed earlier, appears to be quite justified. This, coupled with the fact that the first four categories in the publications indicator account for most of the variance in research publications among universities suggests that collection of data on the remaining, less verifiable categories could well be discontinued in the interests of cost-efficiency. Were it not for their inclusion in the composite competitive index, there could be no justifiable interest on the part of government in collecting data at this level of detail or in going to costly lengths to verify it. If institutions for their part wished to collect it, for informal benchmarking purposes, for example, the Department of Employment, Education, Training and Youth Affairs could undertake to publish it without verification and without including it in the composite competitive index.

The degree of redundancy in the Composite Competitive Index arising from overlap among its components is further illustrated in the following matrix. This shows the extent to which institutions are ranked in the same quartile on each pair of components, taken together. The data relate to the 1996 research quantum.

Table 3 Concordance in Quartile Rankings—1996 Research Quantum

	NCG	***Indus.***	***OPS***	***Pubs***	***Comps***
NCG	-	23	**26**	23	**26**
Indus.		-	**26**	26	**24**
OPS			-	23	**22**
Pubs				-	**27**
Comps					-

That is, 23 of the 36 institutions were ranked in the same quartile on the industry component as they were on the NCG component, and so on. For all pairs of components taken together two out of every three institutions on average were placed in the same quartile.

All told, 17 universities have the same quartile ranking on all five components. A further five institutions have a single discrepancy only in their rankings across the five components, and in all cases the displacement is to an adjacent quartile. Nine other institutions have two discrepancies in their rankings but again the displacements are to adjacent quartiles. That leaves five institutions where there are displacements across a range of two quartiles.

Pending formal evaluation, the above analysis suggests that there are some reasons to question the cost-effectiveness of the research quantum in its present form as a performance-based funding measure. While the Composite Competitive Index is not yet fully phased in, clearly the die remains cast against the newer, smaller universities. Yet they are as immersed as the 'winners' are in the collection of a mass of detailed information and will be put to the same lengths to verify the data it produces. For many newer, smaller universities the costs of data collection and verification must represent a significant charge against the return they get. Despite this, it must be acknowledged that there remains a reasonable degree of acceptance of the measure and cooperation by institutions in its workings.

6

Possibilities for Performance-based Funding

Lessons from Overseas

In this chapter we consider some options for performance-based funding strategies that may be appropriate for the Australian system. First it will help to evaluate the accounts from Europe and the United States of America reported in Chapter 2.

In view of the amount of literature on performance funding it is surprising to find that its actual use is quite limited. Of all the OECD countries in our survey we found only five examples (apart from Australia) where funding for a national system is linked directly to performance to any significant extent (see Table 4).

Table 4 *Types of System-wide Performance-based Funding in Seven Countries*

	Approx. % of base funds at stake (or bonus)	***Applies to Education only (E) or to Education + Research (RE)***	***Zero-sum (Z) or Non-Competitive (NC)***	***Areas of Performance: Research Quantity (RQT), Research Quality (RQL), Teaching Quality (TQ), Student Progress (L), Other (O)***
Australia	**5**	R	**Z**	RQT
Denmark	**95**	E	**NC**	L
United Kingdom	**20**	R	**Z**	RQL
Germany (4 states)	**minor**	RE	**NC**	RQT, L
Netherlands	**minor**	E	**NC**	L
Sweden	**60**	E	**NC**	L
Tennessee	**5.45 (bonus)**	E	**NC**	L, O

Note: *Brackets indicate that the area is under consideration*

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The United Kingdom distributes some funds according to indicators of research performance; Sweden, Denmark and The Netherlands distribute all or a substantial proportion of base funding for undergraduate education according to a count of successful students (rather than the more usual practice of counting enrolled students). One state in North America, Tennessee, distributes a bonus (up to 5.45 per cent) with the aid of a complex set of indicators. In four of the German states there are pilot schemes where 1–5 per cent of funds are at stake.

We were not able to find any statement of rationale for the introduction of performance-based funding schemes in the European countries where it is applied; in each instance it seems to have originated with the enthusiasm of a particular government or administration. For instance, in the United Kingdom a conservative government in 1979 wanted to remove the control of a publicly-funded activity from the grip of professionals and providers (Bauer 1995). Not unexpectedly, where governments have changed, there has been a tendency to change the system, perhaps giving it somewhat lower priority (Sweden); or to add components arising from new agendas (Netherlands).

Nor do there appear to be any proper evaluations of these applications of performance-based funding. In Sweden it is reported that evaluation is intended after the scheme has been running for a few more years. So far as we know there are no plans for evaluations in the United Kingdom, Denmark, The Netherlands or Australia.

In contrast to the above, the objectives of the Tennessee scheme are clearly stated:

> The Performance Funding Program is designed to stimulate instructional improvement and student learning as institutions carry out their respective missions. Performance Funding is an incentive for meritorious institutional performance and provides the citizens of Tennessee, the Executive Branch of state government, the legislature, education officials, and faculty with a means of assessing the progress of publicly funded higher education. By encouraging instructional excellence, the Performance Funding Program contributes to continuing public support of higher education and complements academic planning, program improvement, and student learning. (Tennessee Higher Education Commission, 9 February 1990).

Evaluations of the Tennessee program are generally positive but a number of unintended effects and some failure to reach objectives are identified. Among these are the extra workload caused for institutions, unease about the potential misuse of assessments which are in the public domain, doubts about the validity of some indicators, absence of much direct evidence of

better quality (e.g. students' test scores have not changed much), and limited impact of the incentives on academic staff who are not directly involved in measurement.

A survey of formula funding of higher education in the USA suggests that interest waxes and wanes; and that actual use has declined somewhat in the last two or three years (McKeown & Layzell 1994).

We can only speculate on the reasons for this very limited uptake of what, on the face of it, is an appealing idea for steering universities to perform better. One obvious reason for caution is the paucity of empirical evaluation. We suspect that, if and when there are evaluations of the 'Scandinavian Model', the results will support what is at present only anecdotal evidence, namely that including the proportion of successful students in the formula does lead institutions to focus their attention on reducing drop-outs and improving the teaching and learning process. Whether there will be counter productive responses such as the lowering of standards remains to be seen. So far this has not been a concern.

It is of interest to note that the Organisation for Economic Co-operation and Development, which has played a prominent role in advancing thinking and practice about quality assurance in higher education, has not contributed in the same way to exchanges of ideas about performance funding.

Second, the cost, complexity and verification problems of some schemes are emerging as a reason for caution. This has been reported in evaluations of Tennessee. In Australia the counting and verification of publications for the research quantum is reported as a costly exercise within institutions and is of concern at system level. In the United Kingdom the scheme for assessing research and teaching quality are expensive in academic time.

A third reason for limited uptake may be the potential which performance-based funding has for provoking counter-productive responses in institutions. Apart from the isolated crude attempt to outwit the money managers, there is the possibility that, if the strategy has not been thought through clearly, performance-based funding may cause the neglect of important activities which are either not in the formula or are not capable of being quantified. These issues are addressed in more detail below where we consider the impact of the research quantum on the quality of teaching, learning, scholarship and research in Australia.

A fourth cause for caution concerns the concept of performance-based funding itself. The somewhat rigid linkage of funds with performance indicators presupposes that the indicators are precise and valid measures of the desired institutional behaviour. In many instances this is unlikely to be the case. Second, it is assumed that the reward or penalty of more or less

money is the appropriate one in all circumstances. There may well be circumstances when it is appropriate to assist a poorly performing institution rather than to punish it.

In contrast to the direct linkage of objective performance indicators to funding, there are examples of indirect linkages. In the United Kingdom and The Netherlands, the Minister may penalise a university which does not respond adequately with remedial actions following a poor quality assessment. The Royal Melbourne Institute of Technology case study also describes a scheme under discussion where courses could be assessed according to objective indicators, including performance, with the results being reviewed for appropriate action by a central committee.

Indirect linkage of funding with performance affords the opportunity for rational consideration of the circumstances relating to the poor (or good) outcomes. For example, a particular course may be performing poorly due to conditions beyond its control. In such a case, rather than automatic punishment, reasoned consideration can be given to priorities and the steps that would be needed to raise performance.

Existing Performance-based Funding in Australia

Australia is the only country where quality assurance (via the Committee for Quality Assurance in Higher Education (CQAHE)) has been linked to substantial amounts of state funding. This exercise has yet to be evaluated and that is not our task, but two brief comments can be made here. First, the prospect of a relatively small prize is frequently sufficient to provoke a very substantial response. This has been noted in a number of funding contexts. Second, in line with the observations made above on indirect linkage of performance with funding, there would seem to have been a case for assisting some of the newer and smaller universities which consistently came low in the lists.

In Australia the research quantum is the only system level strategy of linking some base funding with performance. The assembly of weighted indicators, known as the Composite Competitive Index, places emphasis on quantity of performance rather than on quality which is more difficult to measure. In the United Kingdom, which is the only other national system using performance-based funding for research performance, the emphasis is more on quality of research.

Given the circumstances which led to the research quantum, there is no official statement of its rationale, or of any objectives for changing individual or institutional behaviour. The research quantum originated as an expedient for distributing funds left over after the introduction of the

Relative Funding Model. It is generally accepted in the system and has stimulated considerable research activity across the system. A number of universities now use performance indicators for internal distribution of funds for research, including those won from the research quantum exercise.

Although there has been no evaluation of the research quantum we have encountered some strong criticisms from academics and administrators who are concerned at the negative impact which they see the strategy having on teaching[2]. The research quantum is reported to have had the effect of diverting interest from students and shifting resources in departments towards research and away from teaching. Staff are reported to believe quite strongly that career advancement is linked to publication of research; and that effort devoted to improving the quality of teaching is neither recognised nor rewarded. (Ramsden 1995). There are similar reports from the United Kingdom including an observation by Bauer and Cogan (1995) following a review of published accounts that:

> Staff recruitment is being distorted to recruit those with track records which can be exploited in assessment submissions, to the possible detriment of teaching criteria and of the recruitment of younger staff. (p. 9)

The presence of a research quantum as the only competitive component in the base funding formula tends to diminish the status of teaching and the interest and resources that are invested in it. We have been informed that former CAE universities have shifted resources from undergraduate teaching to postgraduate research, that staff have been put under pressure to complete doctorates or to find a research topic. The promise of extra thousands of dollars in the research budget is a powerful incentive; as is a list of publications when it comes to making an application for promotion. Despite the protestations of universities that excellence in teaching is recognised, many staff do not believe it and a majority say that their interest is in research rather than in teaching (Ramsden 1995).

Of course this dominance of what may be called a research culture is not due only to the research quantum, but it is very likely that it contributes, particularly that component which counts publications. In order to counter these negative effects it has been suggested by the critics that a teaching quantum of equal status to the research quantum should be introduced.

As we have already noted the research quantum appears to focus attention on quantity rather than quality; perhaps this is the intention. Also, like many performance indicators with rewards attached, it encourages institutions and individuals to engage in strategies that may be counter productive from the perspective of the designers. The research quantum is contributing to a

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2 These criticisms were encountered in particular by one member of the project team who visited most universities in the system in his role as chairman of The Committee for the Advancement of University Teaching.

frenetic chasing of grants and publications which, in addition to its unintended effects on the quality of teaching and learning, must also militate against more reflective scholarship and the desires of academics to keep abreast of broad developments in their disciplines.

Future Possibilities

In the following section we describe the pros and cons of several possibilities for system-wide performance-based funding, and one where performance-based funding is limited to intra-institutional use. For convenience these are grouped under the headings:

- Research Only
- Bringing in Teaching and Learning
- Structuring Competitions to Include Teaching and Research
- Steering by Profiles Only

Research Only

The first possibility is of course to retain the research quantum as the only performance-based component of core funding but, in view of the points made in our discussion of it, to simplify the Composite Competitive Index.

Because the National Competitive Grants (NCG) component of the Composite Competitive Index accounts for most of the variation in the formula, other components could be reduced or eliminated without too much change in the overall result. Prior to 1995 the index was based solely on national competitive grants. Now it includes a complicated publications component which is the sum of 22 weighted items relating to: books (four categories), book chapter (one), journal articles (four), major reviews (one), conference publications (four), audio-visual recordings (one), computer software (one), technical drawing–architectural and industrial design–working model (one), patents (one) and other creative works (four). The weightings given to these items range from five points for an authored research book down to 0.1 points for an extract of a paper in conference publications.

If publications were dropped from the Composite Competitive Index the considerable effort and cost of collection of data in institutions, and its verification, would be avoided.

There might, however, be objections from universities and sections in universities which do not score many points on the research funds component that they would be disadvantaged if publications were no longer counted. In fact the near perfect correlation of publications with grants suggests that, as things are now, there is not much basis for this concern. There might also be objections to near complete reliance on competitive grants, that rewarding according to the amount of external funding won, is an excessive application of the 'Matthew Principle' ('to him that hath, it shall be given'—Matthew 25, 29).

Our interviews have revealed the considerable effort that is expended in response to the competition for some of the research quantum. While it is not possible to prove it, the impression is that the research quantum would remain as effective in stimulating research activity if the funds at stake were reduced by a point or two. Nevertheless, whatever simplifications may be made to the research quantum and the associated composite competitive index, the point remains that there is a prima facie case that its operation has serious negative effects on the quality of university teaching and it is to the issue of subjecting teaching and learning to performance-based funding that we now turn.

Bringing in Teaching and Learning

The simplest way of introducing a 'learning' incentive would be to substitute a measure of successful student load for part or all of the present enrolment load in the Relative Funding Model. Experience in Sweden, Denmark and The Netherlands indicates that there are unlikely to be any unforeseen problems.

As noted above, in Sweden about 60 per cent of funding (up to a specified limit) for undergraduate education is allocated to institutions according to students' credit points. In Denmark the concept of 'active students' is used, that is students who are progressing satisfactorily in their studies. Apart from a relatively small base grant (the same for all institutions, irrespective of size) all funds are determined by the number of active students. In The Netherlands student load is based on a count of those who are progressing at the stipulated rate.

These countries do not appear to be concerned about the 'value added' problem which could become an issue in Australia if something similar were to be adopted. The difficulty arises when there are initial differences in the average quality of students recruited into different universities or university courses. Assuming that graduation standards are comparable, it can be inferred that a university with a low average intake which produces

graduates at the same rate as another with a top intake is doing something better. Such achievement should be allowed for in any scheme for performance-based funding.

That it was not referred to in the guidelines for the 1995 CQAHE review, despite the considerable differences between universities in average tertiary entrance rank, may indicate that it is not regarded as of any great importance. Statistical procedures are available which make quantitative adjustments for value added. The necessary information is available in the DEET collections and a sample calculation is being made.

A related problem concerns the distinct likelihood that there are variations between universities in the standard of degrees. This is dealt with in the United Kingdom and Denmark by the use of external examiners, and in Sweden by a form of quality audit. No such mechanisms exist in Australia but there is no reason why a future committee for quality assurance in higher education should not make an audit of academic standards a primary concern. And, while it is unlikely that external examiners will ever be used for all courses as in Denmark and the United Kingdom, it should not be impracticable to establish a scheme for examination scripts from major subjects to be audited on a sampling basis.

On the face of it there seems to be a good case, if student load continues to be counted for the purpose of funding, to include at least an element which recognises the proportion of successful students. Because of its greater diversity and size Australia may not wish to go as far as the Scandinavian model. But it would be relatively straight forward to include in the relative funding model a component for progress or graduation rates. In the first instance, because of the value added issue, this might be given a small weighting.

A forthcoming Evaluations and Investigations Program report illustrates how DEETYA's database could be used to measure flows of students through courses (Sheehan & Burke 1996).

An alternative to including a count of successful students in the formula for base load would be to introduce a teaching quantum to operate either in parallel with the research quantum, or as an equal component in an overall composite competitive index.

The reports of the Committee for Quality Assurance in Higher Education are helpful sources for indicators of teaching and learning.

The approach of the Committee for Quality Assurance in Higher Education was based on institutional self-assessment which was tested through visits by review teams and further informed by reference to publicly available data on the sector.

In its report on the 1994 Quality Review of Teaching and Learning, the Committee listed the outcome measures identified by institutions in their own portfolios (see Appendix G, volume I). The Committee noted that several of these were really input rather than outcome measures, e.g. student demand, entry levels, TAFE articulation, progress with equity targets.

Discounting these, the remaining indicators have been regrouped below into teaching indicators and learning indicators. Those which are publicly available are shown with an asterisk.

	Teaching Indicators		***Learning Indicators***
*	Staff:student ratios	*	Rates of student progression
*	Staff attributes: qualifications/ publications		Rates of student completion
[1]*	Teaching excellence/awards		Value added (outcomes for disadvantaged students)
	Peer evaluation		PhD examiners' recommendations
[2]*	Student satisfaction surveys		Postgraduate student publications
	External course accreditation	[3]*	APA and other postgraduate awards
	National/international adoption of practice		Thesis completion times, student prizes, competitive awards
			Employability/starting salaries
			Further education
			Employer/professional body satisfaction
			Graduate attributes
			Industry placement

Notes:

1. *CAUT awards are publicly available.*
2. *CEQ results publicly available from 1996.*
3. *APA awards publicly available.*

In the body of its report the Committee commented on some broader qualitative aspects of the management of teaching and learning and on indicators associated with them. These broader indicators of quality and performance in the management of teaching and learning were as follows:

- institution wide approach to planning and management;
- integrated, university-wide processes for evaluating, monitoring and review;
- use of national and international benchmarking;
- identification of course objectives and the linking of objectives to assessment methods and identified outcomes;
- course approval procedures;
- use of external stakeholders in course design and review;

- matching of delivery style to learning needs of particular groups of students;
- monitoring of examination standards, mark scaling;
- external input into assessment;
- standards for postgraduate supervision;
- rigour of staff appointment processes;
- weight given to teaching skills in promotion;
- staff appraisal system;
- opportunities and programs for improvement of teaching skills;
- innovation in the area of teaching and learning;
- alignment of student services to institutional mission including targeting of support to equity groups and international students;
- access to, and availability of, effective student services, especially library and information technology;
- provision for effective student participation on university committees;
- practical implementation of student grievance procedures; and
- feedback on changes resulting from student surveys.

An index could be designed using measures of:

- teaching quality, including students' perceptions of teaching (improvement on the Course Experience Questionnaire or similar measures), staff promotions based primarily on teaching excellence, peer evaluations, staff qualifications and awards in university teaching, teaching grants obtained (e.g. CAUT NTDGs) and publications of text or resource material for teaching (e.g. publications accepted by UniServe); and
- learning outcomes as indicated by graduation rates, 'grade point average' based on a standardised aggregation of pass, credits, distinctions etc., the Linke indicators of 'total load passed' and 'total load to completion' and graduate degree completions.

Using a teaching quantum or a teaching and learning quantum alongside a research quantum would give more prominence to teaching. But, as with the present Composite Competitive Index for research, it could be subject to distortions as individuals and institutions try to maximise their returns by means not anticipated by the designers. With indicators of students' learning there is the Scandinavian experience to draw on where the indicators are simple and robust. The teaching component, however, has never, so far as we know, been used when substantial resources are at stake. Prudently therefore, any initial application should be linked to modest rewards in the first instance.

Ideally the funds at stake for a teaching and learning quantum would be of the same order as those for the research quantum, although in the first instance they may have to be less, simply to buffer any sharp discontinuity in institutional funding. (See Section 3 below for a discussion of where funds for a teaching and learning might be obtained.)

A final point of some significance is that research quantum and teaching quantum are not symmetrical concepts. Research quantum is an optional extra, despite the fact that most academics say that research is the thing that interests them most of all. Teaching is not an optional extra: at bottom it is why the public supports universities. An academic who fails to research may not be promoted; one who fails to teach will be sacked. Thus whereas a research quantum may be used to encourage departments and individuals to do research, a teaching quantum would be used to encourage staff to teach better, or departments to take better care of their students.

Structuring Competitions to Include Teaching and Research

The problem identified in the previous chapter, that the research quantum produces a very inequitable distribution of funds, is unlikely to be diminished much, if at all, by the simple addition of a teaching and learning quantum. If this is regarded as a problem, one solution would be to structure a competition in which fewer institutions compete on research performance for an appropriately reduced pool of funds. The balance of the funds could go to establish a centrally administered teaching quantum which would be subject to a separate competition among the remaining institutions.

In any such scenario it would be necessary to decide which institutions should continue to compete for the research quantum, and which for the teaching quantum. In the context of performance-based funding, this decision should not be made on typological or any other a priori grounds that would have the effect of cementing into the research competition, say, a top X or big Y set of institutions. It could be based instead on the use of qualifying criteria, for example a minimum of $10 million in external research funding and a per capita research revenue of $10 000. From the 1994 data, use of these two qualifying criteria in conjunction would admit 14 institutions to the research competition.

If an approach along these lines were to be adopted, some change would be likely from year to year in the composition of the qualifying group. The scale of reduction in the size of the quantum itself would also need to be determined. This could be related to the share of the current quantum (or average share of recent quantums) won by the qualifying institutions. The 14 institutions in the above example collectively received slightly more than 80

per cent of the $218.6 million at stake in the 1996 quantum. This suggests a reduction of the research quantum to $175 million, with the balance of $45 million going to establish a teaching quantum.

One criticism of the CQAHE exercise was that the heterogeneous nature of universities, composed as they are of relatively independent and culturally different faculties and schools, was not recognised. The quality methodology and conclusions applied to entire institutions, and internal differences were averaged out in the process. Thus a first-rate engineering faculty may be penalised because it is in a university with several average or sub-average faculties. This important aspect of the nature of universities could be acknowledged in a performance-based funding exercise by making fields the initial focus of assessment, as in England. The elements contributing to a good or poor result would then be more obvious to those concerned. And, if it were deemed to be desirable, results could be aggregated in such a way as to dampen distortions due, for example, to the impact of the presence or absence of a medical faculty on the research quantum.

With research, if field rather than institution is taken as the operative level, the competition could be structured by including all institutions which achieved a top six ranking, say, for external research funding in any field. With 12 fields, that approach would provide 72 possibilities for inclusion. This approach would give universities with national standing in only one or two fields the chance to qualify in a given year. It would also discriminate better between strong and weak areas of research in the traditional universities. On 1994 data, the competition would include 17 institutions which attracted 83 per cent of the quantum. On this basis, they would compete for a reduced quantum of about $180 million, with the balance of $40 million going to establish a teaching quantum.

A refinement of the approach would be to set per capita research income thresholds in each field as a criterion for an institution's inclusion in the rank ordering for that field. To leave the teaching quantum at this level, however, would continue to devalue the educational role of universities relative to their research role.

One way of increasing the size of the teaching quantum would be to revert to the original clawback of 6 per cent of total operating grants. Applying the clawback to growth funds as well as to base grants could be justified on the basis that the resulting increment would go to increase the size of the teaching quantum. For 1996 a flat 6 per cent clawback would have yielded a pool of $280 million with around $180 million going to a research quantum and the remainder to a teaching quantum. A corollary of the reduced gap may be that institutions qualified to compete for the research quantum would opt to compete instead for the teaching quantum. In principle this should be

accepted, provided it does not give rise to unreasonable distortions. To moderate arbitrary shifts in self-classification, qualifying standards could be set for teaching performance, as well as for research performance.

While an eventual objective would be for the teaching component to carry the same reward as research, there is no obvious rationale for such equality. If 'need for improvement' or 'importance to the community' were criteria for fixing the relative weights and rewards, then teaching might well be given a larger quantum than research.

The sharp image of institutions with either research or teaching identities could be softened by including both teaching and research performance in each competition but with different weightings. A group of strong research institutions could be identified as above but the funds at stake would be subject to a teaching component as well as a research one: weighted, for example, as 25:75. For the other group the teaching weight could be anything from 100 to 40, depending on the recognition desired for research.

Separate quantums for teaching and research would do little to correct the impression that teaching and research are independent functions of a university rather than mutually supportive activities. This perception could be reduced by simply having a single 'performance' quantum with a consolidated index which included elements of teaching, learning and research. This is starting to look a bit like the Tennessee model which currently contains ten elements.

None of the approaches discussed so far permit institutions to choose the indicators on which they would prefer to be assessed or which competition they wished to be in (except perhaps for a few institutions at the margin of the qualifying criteria). It would be possible to allow institutions to choose those performance areas which they wished to carry most of their assessment; for example, basic research, applied research and development, contributions to regional development etc. Some activities, especially scholarship and teaching, would be compulsory in all 'profiles' although the weights may be allowed to vary within a range.

A typology or grouping of institutions could be developed, based on the pattern and weights among performance areas. Universities would be invited to nominate the type or group in which they wished to compete for performance-based funds. The funds pool for each group would be established by taking a percentage of the operating grant from each institution in that group.

The areas in which performance is assessed would be research, teaching and learning as described above. Others areas which may be agreed upon could be added, e.g. concerning equity or links with industry. In the following example the areas are limited to research, teaching and learning.

If universities were allowed to choose the category within which they wish to be judged, some would certainly elect to be judged as research-based universities of international stature. Some may elect to be judged as a regional university with a strong commitment to its local community, possibly with a few fields of nationally recognised specialisation. Some may wish to be seen as technologically based teaching institutions with strength in applied research and a strong orientation towards industry. Whichever category they choose, their performance can more readily be assessed against their peers within the category; performance measures can more readily be agreed; and funding by performance can more fairly be distributed. In a category it chose itself, and with performance measures appropriate to that category, a university has only itself to blame if its performance diminishes its funding.

The competitions would be defined by specifying a minimum proportion of points for an area which institutions in particular categories must include in their total. For example, out of 100 points, major research universities could be required to include a minimum of 50 for research, 15 for teaching and 15 for learning, leaving 20 points to be allocated at the institution's discretion. Regional universities may be required to include a minimum of 5 for research, 35 for teaching and 40 for learning also leaving 20 discretionary points etc. (see Figure 2).

Figure 1 *Multiple Competitions for Performance-based Funding: Illustrative Minimum Points for Each Type of University (total points = 100)*

	Research	***Teaching***	***Learning***
Major research	50	15	15
Major institution of technology	50	10	20
Regional university	5	35	40
Comprehensive university	20	30	30

Obviously institutions will choose types and weights so as to maximise their chances and while it would seem unlikely that a regional university would choose to compete with an international research university the reverse may not hold. It may therefore be necessary to place some constraint on choice of the type; for example, by using external research income as a qualifying criterion.

To preserve some stability in the system, it may also be necessary to place some restraint on institutions changing from one type to another—perhaps notice of intention to change may be required a year or two in advance.

This model recognises the tendency to homogeneity which is implicit in across-the-board formulae for competitive performance funding. This tendency could be countered by grouping universities and allowing some variation in the formula.

A variation on the idea of several competitions would be to do away with any attempt to define categories or types of universities. Rather than having, say, four groups, each institution would be invited to nominate its preferred performance areas and, within limits, its preferred allocation of weights. In effect this would recognise that there are up to 36 distinctive universities. Negotiation of performance areas etc. could be part of the profiles exercise. This brings us to an institution-based approach for the application of performance-based funding.

Steering by Profiles Only

The remaining possibility to be considered would eschew system-wide application of performance-based funding. Rewards (and penalties) would be built into the profiles process. A satisfactory internal performance-based funding scheme, or (after Linke) the setting and attainment of appropriate achievement, or quality improvement targets could be made a condition of the contract between institution and government for an element of the operating grant.

Our review of international experience in linking performance measures to funding and our own informal evaluation of the research quantum indicates that any application should not be embarked on before there has been careful consideration of the objectives and likely positive and negative outcomes. There are only a few examples of practice to draw on; there are no evaluations of sufficient relevance to Australian conditions.

This is not unexpected. Universities are complex organisational systems capable of absorbing or deflecting to their own advantage interventions designed to steer them to particular ends. Only indicators which are refractory to distortion and very close to specified objectives are likely to produce responses that are consistently within the desired range. Student progress seems to be one such indicator in the Scandinavian context, but there is no guarantee that it would work in Australian conditions.

The profiles process and the associated contract as developed in Australia is capable of being employed as an indirect method of linking funding rewards or punishments to performance. Objectives could be agreed with government but, after negotiation, it would be left to the institutions to work out the best ways of implementation. Installation of performance-based funding for internal distribution or the specification of suitably demanding

targets, having regard to performance in comparable institutions and to own goals and circumstances, could be part of the profile agreement. Assessment of progress is made in follow-up meetings.

An advantage of internal rather than external performance-based funding is that university managers are closer to the action than system-wide managers and in a much better position to know what is working and what is not. Important but difficult to operate ideas such as value added could be tested without too much damage. Remedial action can be reasonably prompt.

7

Overview

After looking at examples of performance-based funding in Australia and around the world, and reading the relatively scanty literature, three questions immediately spring to mind:

- with all the current push for accountability, why is performance-based funding not more widely used and discussed?;
- what are its effects, for better and worse?; and
- if one wanted to implement a performance-based funding system, what factors should one bear in mind?

A previous minister, J. S. Dawkins, was sufficiently enamoured of performance-based funding to write it into the 1988 White Paper as government policy, yet it has been only very partially implemented. A number of American states have observed it operating in Tennessee, have adopted it, and then retreated from it. Why do so few countries around the world use it?

The question about the attitudes of American states was put to Professor Trudi Banta and other Americans at an international conference in Queensland in July 1996. Their answer in summary was that the reluctance of several states had more to do with historical and political factors within each state than with the merits of performance-based funding or Tennessee's scheme; they added that it is now again being promoted and winning wider adoption.

Nevertheless, performance-based funding does pose some problems for university systems. In all but one instance of performance-based funding that we have found, it is based on the previous year's performance, whether that is in enrolment of students in Scandinavia, improvement of institutional performance in Tennessee, or distribution of the research quantum in Australia. The exception is England, where performance is reviewed every four years. Universities are not institutions which perform well under conditions of instability and wide fluctuations in funding; as Denise Bradley has pointed out in the press, about her own university: 'We are not running a fish-and-chips shop'. A university is a collection of highly talented people, staff and students, brought together with effort and cost for long-term achievements. A scholar may—almost certainly should—take several years to write a significant book or bring a new scientific discovery or technological process to fruition.

The performance of whole universities in all their aspects cannot be measured from one year to the next, though individual marginal aspects might be; and the English do not attempt to measure whole universities, but only their component departments. One might meaningfully compare the performance and standing of a given university now with what it was ten or twenty years ago, and use its present standing as a benchmark for comparison ten years hence; but to say, 'We published 890 articles last year and only 863 this year—we are slipping back', is facile, even if one disregards the quality of the articles. Annual fluctuations in performance are only to be expected, and provide no sensible basis for funding of intrinsically long-term institutions. Trends might form such a basis, but trends are hard to discern in annual fluctuations.

Universities everywhere are well aware of this, and therefore are wary of full-blown performance-based funding. The longest running system, in Tennessee, uses performance-based funding for a sum marginal in quantity and marginal in that it is not core funding but a bonus for improvement. Australian universities use it for a small though important percentage of their total funding, mainly applied to research. Those European countries which use it in effect use it to make marginal adjustments to basic grants.

The potentially destabilising effect on university budgets and planning is probably the main reason why performance-based funding is not more widely used. Supporting the universities' suspicion of it is their feeling, strong in Australia, that performance indicators are not yet sufficiently well developed. The composite index for the research quantum is seen as over-elaborate and requires much effort in verification; universities are not looking for still more rods for their academics' and administrators' backs. The same suspicion in part underlies the American reluctance to embrace performance-based funding. If one wanted to implement such a system even for marginal funding, much more work has to be done to devise clear, simple and widely accepted indicators.

Furthermore, where it has been implemented, performance-based funding is used to achieve specific targets: more student enrolments, or more students of a certain calibre, or more research output, or—in Tennessee's case—improvement on a number of specific and agreed targets. A university's performance overall is the combination and interaction of a very large number of specific activities, almost as human health is the sum and interaction of a large number of physiological and mental processes. To gather reliable data for complete performance-based funding would leave the university little time to carry out its core activities; even the limited scrutiny of the Committee for Quality Assurance in Higher Education caused the universities so much effort that it was agreed to be impractical to continue the annual exercise indefinitely. That is not to say that funding for

specific types of performance is not valid; it clearly works in a number of situations, but it must be recognised as making changes at the margins or in particular areas and is not likely to be acceptable as the sole basis of funding.

We want to conclude by drawing attention to some important issues which have emerged from our wide-ranging review of the practice of performance-based funding overseas and in Australia, and by suggesting some topics where some further action may be useful.

Varieties of Performance-based Funding

In our introduction we interpreted performance-based funding as a management strategy whereby part or all of the base funding for an institution is dependent on a formula which includes outcome measures chosen with the intention of steering behaviour towards particular objectives. These objectives may concern priority topics or they may simply be directed at greater effectiveness or efficiency.

In fact we pointed out that in most countries where performance-based funding of higher education is practised there has been no clear statement of purposes or objectives, the research quantum in Australia being one example. Without a statement of intentions and expectations any evaluation is difficult and this is perhaps the reason for the dearth of reports on the effectiveness of performance-based funding in practice.

Performance-based funding can take a number of forms. First, the funds that are at stake may be the institutional base grant, or they may be linked to supplementary funds. In Australia the research quantum is a component of the base grant whereas the 'quality money' is a bonus. Tennessee also operates a bonus system with money that is additional to base funding. The size of the funds at stake also varies from 60 per cent of the base grant, as in Sweden, to nearer 5 per cent, as in Tennessee and with the research quantum. The 'quality money' was equivalent to between 1 and 2 per cent of the operating grant.

A second issue is whether institutions should compete against one another for the funds or against independent standards. In the Tennessee scheme funds can be won but not lost, in the sense that when performance does not reach prescribed and agreed levels any unallocated monies revert to consolidated revenue. Such a scheme might be more attractive to Australian universities than the somewhat unbalanced competitions in which some of them find themselves. Although the difference between Tennessee and the Australian quality exercise may appear to be semantic, the discriminatory

banding aspect of the Australian scheme engenders a sense of loss among those universities which come in at the lowest band, even though they receive some reward.

Third, the rules for performance-based funding may leave the use of the monies earned to the discretion of the university, or the uses may be specified. In most instances there is little prescription, universities being free to allocate the funds as they wish; or there may be a broad direction, for instance that funds are to be used for education but not research (as in Sweden and Denmark). In Australia, research quantum funds that are won may be used for any university purposes and the method of distribution is left to the discretion of each institution. Nevertheless most universities devote the funds to research and a significant number distribute the greater part to the departments or faculties that won them.

It is worth noting that the use of performance-based funding for internal distribution is now common in the funding of research in Australian universities. In Chapter 6 we point out that one option for a government wishing to encourage the practice of performance-based funding would be to penalise universities which did not institute a satisfactory internal scheme. In effect this would mean simultaneously applying performance funding at two levels—system-wide and within institutions.

Distortions

There is a law of physical chemistry which states that when a change is introduced to a system that is in equilibrium the system adjusts itself in such a way as to try to neutralise the impact of the change. This is a fair analogy for social systems such as universities which are capable of responding to attempts at steering in ways which defeat the aim of the exercise. This may take the form of creative statistics, e.g. generous definitions of what counts as a publication for the research quantum; or it can be behaviour which is contrary to the intentions of the performance-based funding planners, e.g. departments might be tempted to lower examination standards instead of teaching more effectively, if graduation rates are rewarded.

If the possibility of such distortions is to be kept low, indicators should be chosen which are robust and readily verified. Also the range of possible behaviour distortions should, as far as practicable, be anticipated by the performance-based funding planners when deciding which indicators are to be used. Yet in trying to change social systems the best of planning can go awry because of the inherent unpredictability of institutional behaviour, so that follow-up evaluation is always necessary if the scheme is to be kept on track.

To pursue the chemical analogy further, interventions cause changes not just in the targeted area, but throughout the system as it seeks to restore equilibrium. We have noted in Chapter 6 that the introduction of the research quantum seems to have caused a decline of interest in teaching at a time when the system managers were doing other things to enhance the quality of teaching and learning.

Because there has been so little experience with performance-based funding, we stress the importance of giving careful consideration to both the likely direct and indirect effects of any incentive funding scheme. Such consideration would involve a precise statement of the objectives of the scheme, and at the same time examination of other objectives of universities which may be affected. If performance-based funding is to be extended in Australia the first step should be an evaluation of the research quantum, focusing on both the impact it has had on research behaviour and on any unintended impact on other university activities, especially on teaching and learning.

We are aware of the view of one interest group that the research quantum should not be evaluated until about 2000 AD, when there will be five or more years of experience with use of the Composite Competitive Index. Our own view is that the anecdotal evidence for negative impacts is sufficiently strong for action to be taken immediately. The absence of any comparative experience on which we can draw strengthens the case for evaluation sooner rather than later.

On the face of it, if improving research quality is an objective of performance-based funding, then using performance indicators tailored to that objective would make more sense than using the present composite index. The only examples that we know of are the peer review programs of England and the ARC method for awarding large grants.

The Standards Problem

The first response of most outside critics to the Scandinavian model of performance-based funding is that institutions would not be able to resist the temptation to lower standards, thereby passing more students and earning more funding points. This response begs a number of questions: whether, for instance, degree standards vary already between universities or between faculties within them; and, if they do, does it matter? Behind these questions is the awkward one of exactly what standards are regarded as appropriate for Australian universities. Up to this point, Australian universities have relied on self regulation and informal mechanisms (e.g. exchange of staff with overseas universities) for a guarantee of standards.

One of our team helped to examine Danish higher education for the Organisation for Economic Cooperation and Development. His information and all of our informants in Denmark and Sweden deny that any debasing of standards has occurred. There are however in both countries mechanisms for the monitoring of standards which Australia does not have.

With the recent expansion and diversification of the Australian university system it might now be appropriate to have a systematic investigation into standards: what are the desirable standards for our universities and should there be mechanisms for monitoring them? Some years ago the Australian Vice-Chancellors' Committee initiated a program directed at the standards of honours degrees. This has fallen into abeyance, but it may be worth considering a successor scheme whereby an independent audit of standards, according to main fields and disciplines, is established.

Pending such an audit it may be prudent to be modest in any application of performance-based funding to learning outcomes.

The Value Added Problem

The value added question is related to the issue of degree standards. Because initial TER performance is correlated with students' university learning outcomes, the argument is that, if degree standards are comparable, a department with an 80 per cent graduation rate from a student intake of low average tertiary entrance rank must be doing a better teaching job than one with a similar graduation rate from a high average tertiary entrance rank.

As with standards, our Scandinavian informants did not see any need to make any allowance for the value added phenomenon. It might exist; there is considerable variation of new and old institutions in Sweden, and there may well be variations in calibre of students; but it has not been raised as a serious obstacle to performance-based funding.

There are statistical methods which can be used to allow for such initial differences, but as far as we know they have never been applied as a correction in the context of performance-based funding. Because of this it would be unwise to apply the correction before it has been trialled. Once more it would be useful to encourage experimentation within universities. Quite apart from the possible contribution that it might make to the construction of statistical indicators, discussing the idea of value added draws attention to some educational issues pertinent both to preparation for university and performance once there: for example, the reasons why the Department of Astrology has a particularly high failure rate when its

students are from the top of the TER range; or why some students with poor tertiary entrance rank outshine others of greater initial promise. The technicalities of calculating value added are discussed in Appendix 5.

Diversity

When performance-based funding is used across the system it can, like a Procrustean bed, force institutions into the one mould, lopping off divergent features and reshaping others. The research quantum does this to some extent, encouraging all institutions to focus on getting more research grants and more staff publications. This may be the intention and if that is so the research quantum would probably get a good evaluation. The question still needs to be asked whether it is desirable that so much scholarly activity should be pushed in this one direction. The same question applies to any formula funding model where the same yardstick is run across all institutions.

What we are suggesting here is that any funding method—be it the Relative Funding Model, performance-based funding, block grants or market forces—will have implications for the extent and nature of diversity among the institutions of the system, some more than others. It may be timely to ask just what spread of characteristics we want in our university system—it is unrealistic to think that all can be outstanding in basic and applied research, scholarship, in undergraduate teaching, in community relations and in graduate studies. What diversity do we want, and what method of funding is likely to contribute most to that end?

If there is agreement in Australia over the sort of diversity that is desirable among our universities, it may be appropriate to approach performance-based funding not as a single competition but as one where there is more than one competition; or at least where there is some choice for institutions with respect to the indicators that are used and the weights that are given to them. For example, some universities may wish to stress their research capacity, others their contribution to regional development, and these are different but justifiable ends requiring different indicators.

We assert, however, that there are core values and activities shared by all universities. These concern scholarship, teaching and learning, and must be nurtured in all, whatever the funding formula may be.

Design Criteria and Strategic Issues

With the advantage of the above analysis, we can now suggest criteria that can be used by government planners when considering possibilities for using performance-based funding. There should be:

- clear unambiguous objectives—these should not be inconsistent with other policies;
- an understanding of the process connecting the stimulus with the desired outcomes;
- general acceptance of the scheme by the system;
- involvement of institutions in the development of indicators;
- awareness by individual academics of the scheme and its intended impact, particularly when the desired responses are at department level; and
- costs for data bases and administration that are not excessive—the scheme should be efficient in the sense that the changes justify the costs (including any negative outcomes).

Among the strategic issues which need to be considered in designing a system which links assessments of performance to funding are:

- whether the funds at stake are to comprise all (or the greater part) of base funding or a fraction calculated to be the minimum necessary to stimulate desired responses;
- the areas of university performance which are to be targeted, e.g. research, teaching, learning, scholarship, equity programs;
- a choice of indicators which are valid and reliable, and which are most likely to induce the desired responses and least likely to produce unintended negative consequences;
- whether the scheme is to be structured as a competition (as with the research quantum) or whether there are funds to be won but not lost (as in the Tennessee scheme);
- whether institutions are to have any choice in nominating the field or area to be subjected to performance funding and indicators which are preferred; and
- the likely impact of performance-based funding on diversity across the system, and whether the objectives can be achieved better by direct or indirect linkages of funding with performance.

Appendix 1

Project Brief
The Effects of Performance-based Funding in Universities

The National Board of Employment, Education and Training is a statutory body which provides coordinated, independent advice to the Minister for Employment, Education and Training across the range of issues relevant to the portfolio.

The Higher Education Council is one of six Councils of the National Board. It provides advice on the general development of higher education in Australia, and on specific issues, as laid down in the *Employment, Education and Training Act 1988* or as requested by the Minister. As well, the Council may initiate research and policy advice on matters consistent with its functions.

Background

In its 1987 Green Paper, the Government stated that it considered an effective resource allocation system for the higher education sector should have close regard to performance, and that the Government and the institutions had an interest in knowing whether their goals had been met in areas such as student and graduate numbers, and how efficiently those goals had been achieved. Consequently the Government indicated that in its future approach to resource allocation it would fund on output and performance. It also declared its intention to begin addressing this during the 1989–91 triennium.

The subsequent White Paper of 1988 confirmed that the Government intended to proceed with development of a funding system 'that responds to institutional performance and the achievement of mutually agreed goals' and 'takes into account a range of output, quality and performance measures'.

In 1988 a joint AVCC and ACDP Working Party defined a comprehensive set of performance indicators which covered both input and output characteristics of higher education institutions. These indicators were then trialed and evaluated for reliability by the Performance Indicators Research Group, chaired by Professor Russell Linke, in a project funded by the National Board. A report of the outcomes of the deliberations of the

Research Group was published in 1991 (*Performance Indicators in Higher Education*) which recommended adoption of a set of context, performance and social equity indicators. This report outlined a number of concerns related to use of the performance indicators for funding purposes, and while the work of the Research Group represented action in pursuing the Government's intentions in the White Paper of moving towards performance or output-based funding, the indicators proposed in the Linke report have never been formally adopted across the sector.

Despite this, since 1991 there have been three areas which performance indicators have been applied to determine funding allocations for components of universities' grants. The first of these is the Quality Assurance process. In 1994 the Committee for Quality Assurance in Higher Education included a summary of performance indicators used by universities in its report of the second quality round. The Committee also stated that it used quantitative indicators such as graduation and employment rates in determining the groupings of universities into quality bands, and hence the allocations to institutions from the $80 million assigned for quality assurance in the sector. The second case is the research composite index which is calculated from input and output data and is used to allocate the 6 per cent of general operating grant represented by the research quantum. The calculation of this index uses indicators such as the value of competitive grants attracted, the number of research higher degree graduates and the number of publications produced by each university. The final example of performance-based funding is in the equity area. From 1995 grants made under the higher education equity program are to be based on performance measured by an agreed set of performance indicators related to participation and outcomes for designated equity groups.

These examples demonstrate that the Government still has an interest in performance-based funding but that the original goal of the White Paper of allocating all operating grant resources on the basis of output or performance measures has not yet been achieved. Currently the Australian Vice-Chancellors' Committee is working with the Department and the Council on developing an agreed set of performance indicators which will be published annually and which will provide quantitative comparative information routinely about student, staff and financial inputs and outputs for all universities. These compilations represent an important step of achieving reliable data on which future funding decisions could be based.

There are a number of examples internationally where general recurrent grants are allocated on a formula basis related to institutional performance. The characteristics of these models and the extent to which quantitative data on outputs and performance are being used to inform judgements on resource allocation require further examination before similar approaches are adopted in Australian higher education.

In this context the Council wishes to commission a study which will explore literature on the use of performance-based funding in overseas higher education systems, and examine the extent to which Australian universities are currently using such processes to allocate their resources internally.

The Project

The aim of the project is to examine the extent to which performance-based funding is being used internationally, the advantages and disadvantages to such an approach being used for general operating grant allocations, the nature of indicators which may be appropriate for use in formula-based allocation models or in approaches using more qualitative judgements about university performance, and the nature and effectiveness of performance-based allocation processes currently in use to allocate funds internally within Australian universities. The study will review models in use both in Australia and overseas and evaluate the impact such models have had on distribution of resources between institutions or sub-units within institutions. It will also examine the nature of the indicators used in allocation models and the feasibility of applying such indicators nationally given the scope of the statistical data collections conducted in the higher education sector and the agreed set of performance indicators currently being compiled by the Australian Vice-Chancellors' Committee, Council and the Department of Employment, Education and Training.

The Council is seeking a consultant to assist it with these tasks and consult as necessary with staff in the universities to obtain the relevant information.

Key Tasks

In particular the consultant will undertake the following tasks:

- undertake a literature review of use of performance-based funding approaches internationally;
- obtain additional information on the impact introduction of these approaches has had on the distribution of resources between universities and between sub-units within universities as appropriate;
- identify advantages and disadvantages perceived by institutions and State and national allocation agencies of such approaches;
- identify a common core set of performance and output measures used in such allocation models;
- examine the feasibility of the introduction of such indicators in the national Australian higher education environment given the current data collections;

- conduct case studies of several Australian universities which are well advanced in the use of performance-based funding mechanisms for internal resource allocation; and
- draw conclusions on an appropriate set of such indicators and the nature of an allocation process based on them for the Australian environment, taking into account the agreed set currently being compiled by the Australian Vice-Chancellors' Committee and the Department of Employment, Education and Training.

The consultant will provide a written report on the findings arising from these tasks and indicate the likely effects of the introduction of performance-based funding on the resources available to universities.

Timing and Duration

The project should commence in December 1995 and be completed by the end of July 1996.

Funding

Funding for the project will be provided under the National Board's Grants for Innovative Projects Program. Project proposals will be evaluated on the basis of their cost effectiveness.

Project Proposals

The project proposal should include details of the budget, proposed methodology, and the qualifications and experience of the personnel to be involved.

Selection Criteria

Selection criteria for assessing project proposals will include the following: a strong background/demonstrated expertise in the area to be investigated; a sound knowledge and understanding of the issues in the project brief, including familiarity with relevant literature and current initiatives; capacity of the proposed methodology to deliver the specified outcomes; adequacy of resources to achieve the project objectives within the given timeframe; and value for money.

Contractual Arrangements

The successful tenderer will be required to enter into a contract with the National Board for the provision of the consultancy services.

Reporting Requirements

The consultant will be required to submit written progress, interim and final reports. Two hard copies of the final report will be required together with a copy of the report on disk, in Microsoft Word for Windows for IBM-compatible computers.

Payments

As a general rule, payment is made in three instalments. The first instalment is paid on receipt of a satisfactory progress report, the second on receipt of a satisfactory interim report and the final instalment on receipt of a satisfactory final report.

Project Management

The project will be managed by a steering committee reporting to the Higher Education Council.

Submissions

Project proposals should be forwarded to:

Ms Clare White
Director
National Board of Employment, Education and Training
GPO Box 9880
CANBERRA ACT 2601

Closing Date

The closing date for submissions is 3/11/1995.

Evolution of Tennessee's Performance-funding Standards 1979–1997 Standards and Associated Weights (% of 100 points)

1979–1980	%	*1981–1982*	%	*1983–1987*	%	*1988–1992*	%	*1993–1997*	%
1. Program accreditation	20	1. Program accreditation	20	1. Program accreditation	25	1. Accreditation	20	1. Accreditation	10
2. Graduate's performance on major field test	20	2. Program performance outcomes	20	2. Program field evaluation—via testing or peer review	30	3. Major field assessment	30	3. Measurement of general education outcomes	10
								4. Alumni and enrolled student surveys	10
3. Graduates' performance on general education outcome measure	20	3. General education outcomes	20	3. Institution-wide education outcomes via test scores and value added for 4-year and placement of graduates of 2-year institutions	25	3. Undergraduate general education outcomes	20	5. Improvement actions taken to remedy identified weaknesses	10
								6. Peer review of non-accreditable undergraduate programs	10
4. Evaluation of programs and services via surveys for students, graduates, employers	20	4. Programs/services satisfaction	20	4. Instructional improvement based on surveys	10	4. Satisfaction surveys	15	7. Master's program reviews (universities) or placement (2-year institutions)	10
								8. Enrolment goals for campus-specific groups	10
5. Peer evaluation of academic programs	20	5. Evaluation planning for renewal and improvement	20	5. Planning for instructional program improvement	20	5. Corrective measures (planning for instructional improvement	15	9. Persistence to graduation for minority and all students	10
	100		100		100		100		100

Source: Banta, Trudy W., Rudolph, Linda B., Van Dyke, Janice & Fisher, Homer S. 1996 'Performance funding comes of age in Tennessee', Journal of higher education, vol. 1 (Jan–Feb).

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Appendix 3

Correlation of Research Income with Publications: 36 Universities

1996 Research Quantum Allocation Based on Weighted Average of 1993 and 1994 Composite Index Data

1=Highest rank; 36=Lowest	***reverse income rank (X)***	*reverse publications rank (Y)*	***1996 weighted publications rank (Y)–Predicted***
Melbourne	1	1	0.984943848
Sydney	2	3	1.969887696
New South Wales	3	5	2.954831544
Queensland	4	4	3.939775392
Monash University	5	2	4.92471924
Adelaide	6	6	5.909663088
Western Australia	7	7	6.894606936
Flinders University	8	12	7.879550784
Australian National University (Fac.)	9	11	8.864494632
Newcastle	10	10	9.84943848
Macquarie University	11	14	10.83438233
University of Tasmania	12	20	11.81932618
La Trobe University	13	9	12.80427002
New England	14	16	13.78921387
Curtin University	15	13	14.77415772
Royal Melbourne Institute of Tech.	16	18	15.75910157
Wollongong	17	17	16.74404542
Griffith University	18	19	17.72898926
Murdoch University	19	22	18.71393311
James Cook University	20	15	19.69887696
Qld University of Technology	21	8	20.68382081
South Australia	22	25	21.66876466
University of Technology, Sydney	23	21	22.6537085
Western Sydney	24	24	23.63865235
Deakin University	25	23	24.6235962
Northern Territory University	26	35	25.60854005
Victoria University of Technology	27	26	26.59348389
Swinburne University of Technology	28	32	27.57842774
Canberra	29	28	28.56337159
Charles Sturt University	30	29	29.54831544
Edith Cowan University	31	27	30.53325929
Central Queensland	32	31	31.51820313
Southern Queensland	33	30	32.50314698
Southern Cross University	34	33	33.48809083
Ballarat	35	36	34.47303468
Australian Catholic University	36	34	35.45797853

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Appendix 4

Government Funding of Higher Education in 6 OECD Countries

The project commissioned the Centre for Higher Education Policy Studies (CHEPS) at the University of Twente, The Netherlands to prepare the following reports on Denmark, Germany, Netherlands, Sweden and the United Kingdom—England and Scotland. The report on Australia was prepared in the Higher Education Division of the Department of Employment, Education, Training and Youth Affairs (DEETYA).

The European reports were written mainly by Ben Jongbloed of CHEPS. The section on Germany was written by Jos Bjkoelman.

Australia

Higher Education Funding and Accountability Arrangements

Background

There are 36 publicly funded universities in Australia. Four other higher education institutions also receive some public support. With two exceptions, Australian universities are established under State/Territory legislation.

Funding responsibility for higher education in Australia lies with the Commonwealth Government. The Commonwealth took over funding responsibility from the States in 1974.

Commonwealth funding for higher education (with some minor exceptions) is provided under the provisions of the *Higher Education Funding Act 1988*.

Funding Arrangements

The existing funding framework was introduced following a major review of higher education policy and financing arrangements in 1988. The main features of the current framework are:

- provision of operating resources in the form of a single block operating grant;
- allocation of resources in the context of a rolling triennium;
- allocation of research funding primarily on a competitive basis;
- capital funding provided as an element of operating grant (prior to 1994 it was provided in the form of project allocations); and
- an accountability framework provided essentially by the yearly submission of "educational profiles".

Discussion is restricted to the allocation of operating resources and capital funding.

Operating grants consist of three components:

- a teaching related component;
- the research quantum (RQ) component; and
- a capital component.

Teaching Related Component

The *teaching related component* forms the largest part of the operating grant. In 1996, the value of the teaching related component was approximately $4.4 billion compared to $219 million for the research quantum component and $253 million for the capital component.

The teaching related component provides funds for the general operating purposes of the institution. This includes staff salaries, minor works and equipment, etc.

From 1996, operating funding for higher education institutions is allocated in the context of three targets:

- a *total load* target which defines the student load (in Equivalent Full-time Student Units or EFTSU) for which an institution is funded in a given year of the relevant triennium;
- an *undergraduate* target which defines the minimum load (EFTSU) to be dedicated to undergraduate teaching activity in a given year; and
- a *new to higher education* target which defines the number of students institutions are expected to enrol in a given year who have not previously undertaken higher education.

Institutions are expected to meet or exceed each of these targets. While minor variations from target (e.g. up to 2 per cent) in a given year are accepted due to the range of factors which affect an institution's enrolments, consistent under-performance and large negative variations are not acceptable.

In the event of significant or consistent under-enrolment against targets, institutions are requested to revise their plans for the triennium, especially if these do not indicate a sufficiently rapid movement back to target. The main sanction which can be applied in the event of under-performance is the adjustment of operating grant to reflect actual load delivered rather than the target.

Excluding the research quantum and capital components, the operating grant received by an institution in a given year is essentially the sum of:

- the previous year's grant;
- the flow-through effects of previous growth allocations;
- additional growth provided in the current year; and
- other adjustments (e.g. agreed discipline or level 'swaps').

It is important to note that an exercise intended to equalise institutions' grants took place in 1991. This was based on the Relative Funding Model which provided an assessment of the equity of grants provided to institutions. More detail is provided at Attachment A.

Detail is provided regarding the funding of growth in Attachment B.

Research Quantum

The *research quantum component* of operating grant is allocated on the basis of a composite index which contains components relating to success in attracting research grants and research performance.

Capital Component

The *capital component* of operating grant is a fixed amount. This was determined in 1992 on the basis of estimates of institutions' shares of total weighted equivalent full-time student units for the system in 1994.

In addition to the capital funding allocated as part of the operating grant, $37 million annually is available to support new campus developments and institutions experiencing rapid growth. This is known as the Capital Development Pool.

Other Features of Operating Grant

Block Grants

Operating grants are provided to institutions in the form of one line or *block grants*. Grants are not split into components for salaries or equipment purchases for example. Institutions are responsible for the internal allocation of grants between activities.

Triennial Funding

Operating grants are allocated on a *rolling triennial* basis. This means that announcements of funding are three years in advance. For example, at the end of 1995, the Minister for Employment Education and Training announced funding for 1998. This provides institutions with considerable funding certainty.

Other Funding Issues

Tuition Fees

A condition of the receipt of Commonwealth funding is that public universities do not charge tuition fees to Australian *undergraduate* students. Australian undergraduate students make a contribution towards the cost of their education through the Higher Education Contribution Scheme (HECS).

Public universities are permitted to charge tuition fees to Australian *postgraduate* students with certain limited exceptions. There is no regulation of the level of fees which can be charged.

Overseas students at Australian public universities are charged fees for courses at both the undergraduate and postgraduate level. The Commonwealth sets a minimum fee for overseas students at the level of the full average cost of delivery. This is to ensure that operating grant is not being used to subsidise overseas students.

Accountability and Reporting

The accountability and reporting framework within which funding for higher education is allocated has a number of elements:

- educational profiles
- financial reporting
- statistical reporting.

Educational Profiles

Education profiles constitute the major element of the accountability framework for higher education institutions. This role is established under legislation. Section 14 of the *Higher Education Funding Act 1988*, requires institutions to provide an educational profile to the Minister. A condition of receipt of operating funding is (Section 18(1)(b) of the Act) that institutions must spend financial assistance received only in accordance with the educational profile provided to the Minister.

In 1995, educational profiles consisted of the following components:

- a statistical return concerning student load
  - tables in the statistical return cover a five-year period, including the previous year, the current year and the three years of the forthcoming triennium and include details of load by level and discipline group, commencing load, load by funding source (see Attachment B), and
  - the statistical return involves two submissions, a first submission (the main submission) which provides preliminary plans for the relevant triennium and a final submission which incorporates the outcomes of profile negotiations;
- a schedule of tuition fees charged for postgraduate and non-award courses and courses for overseas students;
- an Equity Plan, which provides details of institutions' strategies regarding provision for equity groups, such as the disabled, persons from low socio-economic status backgrounds and women, in respect of non-traditional areas of study;
- an Aboriginal Education Strategy outlining strategies regarding provision and support for Aboriginal students; and
- a Capital Management Plan outlining institutions' plans for the maintenance and development of their capital stock over a 5–10 year time horizon.

An annual round of discussions is held with institutions to discuss issues such as performance against targets, plans for the triennium and any resource bids for the out year of the triennium as policy matters.

Financial Reporting

From 1995, all institutions will provide financial information regarding the expenditure of Commonwealth grants in the form of a set of notes to their annual financial statements. This will replace the current situation in which institutions may either provide information for financial accountability in the form of an accountability statement which certifies that Commonwealth grants have been expended for the purposes intended or in the form of their financial statements.

Statistical Reporting

A condition of the receipt of operating funding is that institutions provide to the Minister requested statistical data (Section 18(1)(g) of the Act). A range of statistical data is currently sought from institutions. The main collections are:

- the Higher Education Student Collection
  - unit record data regarding student characteristics and enrolment information;
- the Higher Education Staff Statistics Collection
  - data regarding the characteristics of general and academic staff employed by institutions;
- the Higher Education Finance Collection
  - data regarding their income and expenditure of institutions; and
- the Higher Education Research Collection
  - data regarding research expenditure.

These data collections provide an extremely comprehensive set of data concerning students enrolled at public universities in Australia, academic and general staff employed, financial arrangements and research expenditure. Summary data from the student, staff and finance collections are published annually in *Selected Higher Education Statistics*.

Denmark

Outline of the Higher Education System

The Danish higher education system can be subdivided into a university sector and a non-university sector. The university sector is made up of five 'classical' universities (offering programmes in humanities, social sciences, natural sciences, medical sciences), 13 vocationally oriented institutions (*højere læreranstalter*) active on specialised or professional fields (business

schools, a technical university, a veterinary and agricultural university, a school of pharmacy, language training) and, finally, eight fine arts and musical academies. These offer 5-year master's (*kandidat*), postgraduate training and (from 1988 onwards) 3-year bachelor programmes. The non-university sector consists of colleges (about 90 relatively small institutions offering medium-level programmes) and vocational schools (offering short-level programmes). The latter offer programmes in technical subjects, teacher training, social work and physiotherapy, etc. Only the university sector has a task in research and postgraduate education (the latter leading to either the licentiate or the doctoral degree).

All in all there are three types of undergraduate education: short-cycle, medium-cycle and long-cycle. Short-cycle programmes (1–2 years) are primarily offered by the vocational schools. Medium-cycle programmes (3–4 years) by universities and colleges and long-cycle programmes (4–6 years) only by the universities. Apart from these, there is postgraduate research training. Combining all types of higher education the total number of students in full-time equivalents (fte) is about 122 000. The five universities have some 45 000 students (fte). The number of students in long-cycle programmes is about 90 000 persons (note: this is not in fte!). Most of them (>80 per cent) study full-time. For medium-cycle programmes the number is somewhere below 50 000 (with more than 90 per cent studying full-time), while short-cycle programmes have only about 10 000 students.

In Denmark there still exists a situation of entrance limits (numerus clausus). Since 1977, the government has operated a central system of entrance regulation, limiting the number of student places. Nowadays, student places, after negotiations with the government, are only set for institutions as a whole, not by discipline. The exception is programmes in medical science and teacher training. Although the number of places in higher education has increased during the last decade, there is annually a large number of applicants who are refused admission for capacity reasons. The option for students to leave the university upon receiving (after three years of study) their bachelor's degree is still not very popular with students. Most of them go on studying.

Traditionally, Danish higher education was regulated strongly by the state. Since the 1980s, the government has increased the institutions' autonomy in areas of setting up programmes, financial affairs and access policy. This development went along with a strengthening of institutional management (i.e. allowing more responsibilities and power to vice-chancellors and deans).

Budget

Higher education programmes are primarily funded by the state. For full-time students there are no tuition fees. Part-time students (most of them in Open University education: *Åben uddannelse*) are charged a fee, covering approximately 25 per cent of the teaching costs. Before 1980, education and research were funded simultaneously. The funding was based on incremental budgeting, and both enrolled students, student intake and the institutions' wishes about research were taken into account.

This funding system was regarded as non-transparent and based on too much and poorly organised information. Furthermore, information on productivity was not taken into account. Therefore, the Ministry of Education decided to separate funding of teaching and research and to base funding on "active students" (see below, next paragraph). In 1980 a new formula-based funding system was introduced that primarily affected the way teaching was funded.

For the Danish higher education sector as a whole, the government strives for the following composition of the budget (we also include figures for the universities; five classical universities and about nine specialized institutions with a research function):

- 62 per cent for undergraduate education (*Ordinære uddannelser*) (40 per cent of the university budget);
- 62 per cent for continuing education, adult education (*Åben uddannelse*);
- 23 per cent for basic research (33 per cent of the university budget); and
- 12 per cent for targeted research (23 per cent of the university budget).

For the fiscal year 1995 the figures (in Danish crowns, DKr) for universities and for all types of higher education combined look like this:

Component	*Amounts (millions DKr)*	
	*Universities**	*All Higher Education*
Education	2180	5050
Research training	110	110
Continuing education	100	150
Open univ. education	200	230
Education total	2590	5540
Basic research	1980	1980
Targeted research	1375	1375
Research total	3355	3355
Miscellaneous**	980	1400
Total	**6925**	**299**

* *all institutions with a research function*

** *operation of museums, libraries, botanical gardens*

Included in the figures presented above is a small amount received by all higher education institutions (*Grundbevilling*), independent of their size. This basic grant is around one million DKr. The largest part of the teaching allocations, however, is based on a formula (see below). Included in the above figures is also a capital grant that higher education institutions receive for the purpose of investments (buildings, premises, laboratories and related costs). So far, the capital grant is not based on a formula. However, in 1994 the Ministry expressed plans to work with formula funding, relating the capital funds to the number of students and/or the number of employees and fields of teaching and research. Together with such future measures, the government would transfer its responsibility in the field of investments to the individual institutions. The government has expressed intentions for an even larger degree of autonomy for the institutions. Thus, institutions will be able to decide on all matters relating to the use of current and capital resources.

In 1994 a budget reform took place. Since then, institutions receive their appropriations as a block grant. Earlier the funds were earmarked for the purposes they were allocated for, meaning that institutions could not re-allocate funds among departments and among the main purposes without the approval of the Ministry. A financial surplus remains in the realm of the institution. At present, a situation exists in which institutions can re-allocate as they want, observing some basic conditions and tasks. Only the matters concerning buildings (construction, etc.) are to be decided by the Ministry.

The Formula

In the system of funding that existed before 1980, there was a fixed relationship between teaching, research and academic administration—50 per cent for teaching, 40 per cent for research and 10 per cent for administration. Since 1980, the funding of research has been independent of the funding of teaching, while for the latter a system of formula funding was introduced. Until 1992, the funding system led to separate allocations for teaching, research, institutional administration, buildings and costs related to buildings, libraries and computer centres, and a 'miscellaneous' category. For teaching funds, first an equilibrium grant was calculated and then the actual grant was found by linear interpolation between last year's grant and the equilibrium grant. All costs, apart from the teaching costs, were funded on an incremental basis. In 1992 the formula was simplified; teaching grants were calculated directly on the basis of a prognosis for active students and a set of normative prices. Administration funds were spread over formula-based teaching funds and research funds.

Education

The funding of teaching (including part of administration) is based on a formula in which the key variable is the number of 'active students'. Active students is not the same as enrolled students. It is the sum of 'passed courses' weighted with 'the standard student work-load for individual courses', i.e. full-time equivalents. This means that all exams that have to be passed by a full-time student in one year add up to one (unity) and different exams may have different weights. The exams taken into account refer to the autumn term of the previous year and the spring term of the financial year in question. This means that for university studies a student normally can gain five points (or 'study step increments' as they are sometimes referred to). In 1994 the number of students enrolled in 12 (research) universities was 95 200, whereas the number of active students was 64 000. For the budgeting process a prognosis of active students is made, based on the same methods as used in population statistics—i.e. new enrolments, drop-out rates and average duration of studies.

Once the active students figure has been estimated the budget is calculated. The calculation uses a unit cost (i.e. cost per active student) for a number of study areas. This is called the taximeter principle (*taksameter*).

A tariff catalogue (like the one included in the table below) is published yearly in the education Budget Bill (*Finanslov*). It includes a tariff for teaching costs (i.e. education and equipment) and a tariff for overhead costs (administration, rent and maintenance of buildings, and other services), which both differ according to subject area. Next to these, some study programmes have a tariff covering the costs of practical training. The level

of the tariffs is not based on detailed cost calculations; they are based on experience and historical data, dating back to the days before the taximeter model was introduced. Table 1 (from *Finanslov* 1995) gives the three respective tariffs (*undervisningstakst, faellesudgiftstakst* and *praktiktakst*) for a number of study programmes. The teaching tariffs for an active student range from 20 400 DKr (e.g. in law and economics) to 76 600 DKr (veterinary science). Overhead-tariffs range from 4900 DKr (law, economics) to 11 300 DKr (mechanical engineering). Formula funding for postgraduate (PhD) students makes a distinction between two types of programmes, namely laboratory-based programmes and non-laboratory-based subjects. For postgraduate students, however, the taximeter model is not operational, because a registration of yearly performance is not made. Therefore, all postgraduate students are counted as active students, limited to a three-year period for each student.

Table 4.1 Tariff (in Danish Crowns) per Active Student in Danish Higher Education, Fiscal Year 1995

Area	***Teaching***	*Overhead*	***Practical Work***
Law, economics, Danish	**20 400**	4 900	-
History, philosophy	**23 500**	5 900	-
Psychology	**25 500**	5 900	-
Languages	**33 000**	9 000	-
Music	**38 800**	7 500	-
Mathematics	**43 900**	9 000	-
Physics	**50 000**	9 000	-
Chemistry, biology	**57 200**	9 000	-
Pharmacy	**76 600**	10 200	-
Veterinary science	**43 900**	7 500	**76 600**
Medicine	**28 500**	7 500	-
Pedagogy	**33 000**	7 500	**30 600**
Teacher training	**43 900**	8 500	-
Agricultural science	**43 900**	11 300	-
Mechanical engineering	**57 200**	10 200	-
Civil engineering	**61 300**	8 500	-
Elec. engineering			
PhD-students:			
Laboratory subjects	**122 200**	10 200	-
Non-lab. subjects	**81 500**	10 200	-

Note: Teaching and overhead tariffs exclude incidental compensations for value added tax (moms)

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The annual teaching budget *T* for institution *i* in year *t* is calculated by applying the following formula, which, for the sake of clarity, disregards formula funding of students in continuing education classes (*Aben uddanelse*):

$$T_{i,t} = A_{i,1,t}*(TT_{1,t}+TO_{1,t}) + A_{i,2,t}*(TT_{2,t}+TO_{2,t}) + \ldots + A_{i,n,t}*(TT_{n,t}+TO_{n,t}) + PR_{i,1,t}*TP_{1,t} + \ldots + PR_{i,k,t}*TP_{k,t} + PGE_{i,t}*(TTE_t+TOE_t) + PGN_{i,t}*(TTN_t+TON_t)$$

where:

Ti,t	teaching budget for institution i in year t
Ai,j,t	number of active students in institution i enrolled in programmes belonging to subject area j (j=1,....n)
TTj,t	teaching cost tariff per active student in programmes belonging to subject area j (j=1,....n) in year t
TOj,t	overhead cost tariff per active student in programmes belonging to subject area j (j=1,....n) in year t
PRi,h,t	number of active students doing practical training in subjects belonging to area h (h=1,....k)
TPh,t	tariff for practical work necessary for subjects in area h (h=1,....k) in year t
PGEi,t	number of post-graduate students in laboratory-based (experimental) subjects in institution i in year t
PGNi,t	number of post-graduate students in non-laboratory-based (non-experimental) subjects in institution i in year t
TTEt	teaching tariff for postgraduate students in laboratory-based (experimental) subjects in year t
TOEt	overhead tariff for postgraduate students in laboratory-based (experimental) subjects in year t
TTNt	teaching tariff for postgraduate students in non-laboratory-based (non-experimental) subjects in year t
TONt	overhead tariff for postgraduate students in non-laboratory-based (non-experimental) subjects in year t

Currently in discussion are performance-related additions to the basic teaching grant. As in Sweden, quality premiums amounting to 5 per cent of the teaching budget are proposed. The premium is to be based on the outcome of teaching evaluations. To this end, once every five years a so-called Centre for Quality Assurance and Evaluation of Higher Education will evaluate and compare study programmes offered by individual institutions. However, it is still unclear whether these plans will be realised by the new government. In view of the problem of high drop-out rates in Danish higher education, the idea was to award supplementary funds to

institutions showing a high retention rate. However, the present taximeter model as well as the system of student support already include financial incentives to raise student performance.

Research

There are only some 14 university, and university-like, institutions that receive a basic research grant. On top of this basic allocation, institutions can—and are indeed supposed to—apply for supplementary research funding on a project basis by applying to the Danish Research Councils, the Danish National Research Foundation or by bringing in funds from ministerial research and development programmes that exist in areas of special priority (e.g. biotechnology and information technology). This is called the system of dual support. Apart from the targeted research grants, funds are coming in through contract research. On average, for the university sector the total of research funds is exceeding the combined funds for teaching.

The basic research grant for an institution is allocated as a lump sum. Its level is calculated on an incremental basis. There is an upper limit to total basic research grants, as from 1995 on it is supposed to not exceed one-third of the total teaching and research funding. Plans were published in 1994 to also tie the basic research grants to performance measures such as the number of active students (including continuing and open education) and the level of research project (e.g. research council) funding. Therefore, for the near future research funding will partly be tied to quality measures.

In the face of the growth of universities in the years to come and to make sure that basic research grants will form one-third of the university budget, the Ministry of Education will have to raise the level of allocated basic research grants. In 1995 this will lead to 100 million DKr in extra grants. For the following years the amount is 50 million DKr. The distribution of these extra funds partly (50 per cent) follows the number of new student admissions per institution and for the other part (50 per cent) is awarded to those institutions with relatively little basic research funding.

Final Remarks

During the past decade and a half, the system of formula funding has been used much to everyone's (especially the Ministry's) satisfaction. The Ministry of Education managed to move resources from fields with excess supply of candidates to fields with a better balance between supply and demand on the labour market. The Ministry felt that it was easier to let funds follow the students (the 'consumer') by employing formula funding than by using an incremental budgeting system—the formula is the argument when

re-allocating. Moreover, the block grant principle gives incentives of economising to the institutions.

Along with the re-allocation of resources the Ministry has managed to achieve a higher productivity in teaching. Over the past ten years, the number of active students per teacher has risen by about 50 per cent on average. Relating funds to productivity gives the institutions an incentive to raise production. In order to raise production, institutions must concentrate upon quality in teaching and in planning of the courses. On the other hand, institutions may be tempted to lower requirements at the examinations. However, in Denmark formula funding is still regarded as the right way of funding.

In recent years the formula was modified in order to make it more simple and to establish a more direct relation between productivity and funding. Nowadays, formula funding accounts for roughly 60 per cent of higher education's basic budget (teaching and basic research grants, excluding project funding). For the university sector alone, the corresponding percentage is lower—around 45 per cent—due to the fact that this sector has a relatively large—incrementally determined—budget for basic research activities.

From the previous sections it is also made clear that the Danish system of teaching and research funding is still undergoing changes. This is reflected by the planned introduction of quality-dependent components into teaching and research budgets. Measures like this are planned alongside a strengthening of the (financial) autonomy of institutions. An example of the latter may also be found in the relaxing and stepping back by the government in matters of entrance limitations.

Germany

Outline of the Higher Education System

Higher education policy in Germany is in fact an aggregate of sixteen potentially different policies, according to the sixteen states (*Lander*) responsible for higher education. The government role regarding higher education is traditionally rather strong, as can be noticed from the various supervisory rights of government and the public funding mechanisms. On the other hand, the notion of academic freedom is considered of paramount importance. The emphasis on the research function of the university means that scientists determine teaching and research, and that their right to administer the internal affairs of higher education institutions is respected.

The integration of differentiation, competition and general performances of the institutions into higher education policy is one of the current issues. Also, the growing number of students, the low priority of higher education on the political agenda, and the time students take to obtain a degree are major concerns. Finally, in discussing higher education policy, the reunification of East and West Germany has to be taken into account.

The universities (*Wissenschaftliche Hochschulen*) and the *Fachhochschulen* are the two main sectors of German higher education. Studies at the universities lead either to the *Diplom*, awarded by the respective institutions, or to the state examination (*Staatsexamen*) (for teachers, law, medicine, and pharmacy). The normal length of studies is supposed to be 10–12 semesters (this varies by subject). *Fachhochschulen* award the *Diplom* (FH), which is supposed to be passed after a normal length of study of 8–9 semesters. The *Fachhochschulen* are vocational-education oriented, and their professors conduct only applied research to a certain extent. While university professors have to teach only eight hours per week, the *Fachhochschul*-professors' teaching load amounts to 18 hours. *Fachhochschulen* are expected to play the role of providing short courses with practical and vocational orientation. Most programmes require their students to spend some time before or during their studies in practical situations (internships).

Access to universities, in principle, is open to all those who have passed the final examination of secondary education, and have been awarded the general *Abitur* (*allgemeine Hochschulreife*). Those holding the *Abitur* degree have the right to study at any category of higher education institution, in whatever subject they want. To be admitted at the *Fachhochschulen*, a specialised *Abitur* (*Fachhochschulreife*) is required, which is awarded at the so-called *Fachoberschulen*. The individual degree holder is eligible to study a special subject only according to the specialisation of his/her *Abitur*. Currently, there are no tuition fees in German higher education.

German higher education institutions are open for access only 'in principle'. Institutions have to accept students based on the number of student places available in the respective fields of study at the respective institutions. The number of student places is calculated on the base of national norms, student:staff ratios, according to the *Kapazitatsverordnung*. In those fields of study in which student demand exceeds regionally or nationally the number of student places available, access is administered by a national admission office (*Zentralstelle für die Vergabe von Studienplatzen*, ZVS). Nationally agreed (among the *Länder*-Ministers for Higher Education), in this case, a field of study is either declared to fall under limited admission (numerus clausus), or under an 'allocation system' (*Ortsverteilungs-verfahren*), in which students, who have to apply for a student place at the central office, are not sure of being 'allocated' to the institution of their first

choice. In the case of a numerus clausus, *Abitur* scores and social factors (such as 'queuing time' for a student place) are taken into account.

Maybe due to the still 'non-advanced age' of the *Fachhochschul* sector, only one-quarter of the student population is educated in this sector, while the remaining students are enrolled in the universities (together with the arts and music academies). Of the 259 institutions in West Germany (the 66 institutions in the East are still in a process of restructuring and adjustment to the Western sectoral structure), 93 are universities, 32 are arts and music colleges, and 134 are *Fachhochschulen*. *Fachhochschulen* are usually smaller in size according to student numbers, while some universities have grown to 'threatening' dimensions (e.g. 1989: LMU Munich, 60 000 students; FU Berlin, 58 000; University of Cologne, 47 000; University of Münster, 42 000; University of Hamburg, 41 000). Forty-nine institutions are non-public, but the number of students in private institutions compared with the overall population is negligible. With only few exceptions higher education institutions are governed and financed within their respective states. Their legal status is as a public institution and at the same time an organisational unit of the state (*Korperschaft des Offentlichen Rechts und zugleich staatliche Einrichtung*).

In the reunified Germany in 1994, 1 856 500 students were enrolled in 325 institutions of higher education. In 1991 this student number represents 21.8 per cent of the 19–26 age group, and the new entrants into higher education in 1991 represents 31.8 per cent of the 19–21 age group. The former GDR, with its 132 423 students in 1988, had a relatively low enrolment percentage of the age group (13.1 per cent newly enrolled of the age group in 1988), compared with Western standards. As in many other countries, enrolment in German higher education has grown tremendously since the 1960s: in 1960 only 4.3 per cent of the 19–26 age group were enrolled in higher education in West Germany compared with 25.1 per cent in 1991, while the newly enrolled students in 1960 and 1989 represented 7.9 per cent and 29.1 per cent of the 19–21 age group, respectively. This percentage of the newly enrolled age group continued to increase (in 1991, 35.6 per cent in West Germany, 31.8 per cent in all Germany).

The provision of positions for scientific personnel in higher education institutions did not keep pace with the growing student numbers. The student:staff ratio suffered considerably: for the university and arts/music colleges sector, it worsened from 9:1 in 1965 to 16:1 in 1989, while the change in the ratio in the *Fachhochschul* sector appears to be of even more concern (from 16:1 in 1970 to 37:1 in 1989).

The student:staff ratio is not used for funding higher education—it only reflects how the institutions have in fact been funded and staffed (see Table 3) in a specific year in relation to their student enrolment (see Table 2). For looking at this condition, sometimes use is made of an official ratio or

parameter, the *Curricularnormwert*, which indicates the hours per semester and week an individual teaching staff member is supposed to commit per individual student (varying between subject groups). This key parameter is used to calculate the balance between supply (of student places, according to teaching staff available) and student demand, in order to decide (on a national basis) whether admission to a subject is administered at the central admission office (applying a numerus clausus or the distribution mechanism) or decentrally, at the individual institutions. It is also used to determine the capacity of an institution.

Table 4.2 Enrolment in German Higher Education (headcount x 1000)

	West Germany			GDR
	Universities	**Fachhochschulen**	**Total**	**Total**
1980	**842**	**202**	**1044**	130
1981	**896**	**225**	**1121**	131
1982	**952**	**251**	**1203**	130
1983	**997**	**276**	**1273**	130
1984	**1022**	**292**	**1314**	130
1985	**1036**	**301**	**1337**	130
1986	**1055**	**312**	**1368**	132
1987	**1082**	**329**	**1411**	133
1988	**1127**	**343**	**1470**	132
1989	**1151**	**357**	**1508**	134
1990	**1212**	**373**	**1585**	133
1991	**1257**	**390**	**1647**	128
1992	**1284**	**397**	**1681**	142
1993	**1306**	**406**	**1712**	163
1994	**1278**	**398**	**1676**	181

Sources: Federal Ministry of Education and Science, Basic and Structural data

AKTUELL Bildungswissenschaft Studenten an Hochschulen, 1975 bis 1991, 7/92, BMBW

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Table 4.3 Teaching Staff (x 1000) in Higher Education

	Universities				Fachochschulen			
	Full time		Part time		Full time		Part time	
1980			33.7		9.2		8.5	
1981	78.2		32.2		9.6		9.7	
1982	79.5		30.7		10.1		10.4	
1984	81.2		31.9		10.2		11.2	
1985	82.6		33.7		10.3		12.3	
1986	85.6		33.7		10.4		12.5	
1987	88.2		33.4		10.5		13.4	
1988	91.4		35.0		10.6		13.9	
1990	97.6		37.9		10.9		16.6	
1991	101.5		40.9		11.4		17.1	
1992	104.1	(129.1)	60.7	(64.0)	11.9	(13.7)	19.6	(20.3)
1993	106.8	(130.4)	67.0	(71.3)	12.3	(14.9)	21.6	(22.6)

Note *1992 and 1993 (former) GDR included; since 1992 research teaching assistants included*

Source *Federal Ministry of Education and Science, Basic and Structural data*

Budget

In Table 4, figures are presented for the total expenditure of all German institutions of higher education from 1980 through 1993. Public expenditures (1975–1989) are presented in Table 5. Despite the enormous growth in enrolment (see Table 2), public expenditure (in real prices) hardly increased. As a consequence the German system of higher education is in a financial crisis.

In 1989, 21 878 million DM was spent from the public purse on higher education. The percentage allocation was as follows:

- basic subsidies (*Grundmittel*), 81.4 per cent;
- additional research grants (*Drittmittel*), 9.2 per cent; and
- student aid, postgraduate study grants, etc., 9.4 per cent.

The federal government (*Bund*) provided only 19 per cent of these funds, while the *Lander* governments financed the residual and major share of the higher education expenditure.

Universities, more than the Fachhochschulen, have additional research income (*Drittmittel*). Of the funds devoted to universities in 1989, 86 per cent were considered to be for basic subsidies and 14 per cent as additional research income. Of this additional research money, only 30 per cent originated from private sources.

Table 4.4 *Expenditure of German Institutions of Higher Education (in million DM)*

	Universities		***Fachochschulen***		
	Current Exp.	***Investment***	***Current Exp.***	***Investment***	***Total***
1980	**14613**	**2444**	1178	192	**18427**
1985	**18895**	**2586**	1533	275	**23309**
1988	**22029**	**3201**	1759	316	**27305**
1989	**23074**	**3321**	1853	385	**28633**
1990	**24876**	**3442**	1980	376	**30675**
1991	**31236**	**4209**	2220	441	**38106**
1992	**32113**	**4528**	2843	578	**42325**
1993	**41527**	**4241**	3198	598	**44725**

Note: *From 1991 on, former GDR included*

Source: *Statistisches Bundesamt, Finanzen der Hochschulen 1993*

Table 4.5 *Public Expenditure on Higher Education (in million DM)*

	1975	***1980***	***1987***	***1989***
Basic subsidies	**10391**	13104	**16626**	17799
Drittmittel	**987**	1247	**1817**	2021
Student aid	**2199**	2466	**2054**	2058
Total	**13577**	**16817**	**20497**	**21878**
Total (prices 1980)	**16992**	**16817**	**16940**	**17240**

Source: *Wissenschaftsrat, Eckdaten und Kennzahlen zur Lage der Hochschulen, Fortschreibung 1992*

The total research budget (expenditure on research in Germany) in 1987 was allocated to the different sectors as follows: industry and private research institutions (70.8 per cent), higher education institutions (12.5 per cent), public non-university research institutions (13.5 per cent), international research units (3.1 per cent).

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Academics compete for *Drittmittel*, which—as mentioned above—account for 14 per cent of the universities' budgets on average. The total amount of money available is limited, and those who want to benefit from these funds have to apply. Applications are usually scrutinised by peers (peer review), before the respective foundation or the German Research Society (DFG) funds projects. This is, however, not a competition between institutions but rather between individual researchers or research groups.

Higher education's main competitors for both public and private research funding are, without any doubt, the publicly maintained non-university research institutions. Contrasting the research budget of these institutions against research money spent at universities, the *Wissenschaftsrat* came to the conclusion that, indeed, the proportions changed exactly at the time when universities had to bear a teaching overload. While in 1975, universities spent 47.2 per cent of the German public institutions' research budget, the share amounted to only 42.8 per cent in 1987, which might not tell the whole truth, since funds devoted to research are not easily separated from the overall funds devoted to higher education institutions. The share of the non-university research units grew from 43.1 to 46.3 per cent during the same period.

Allocation of Funds (Basic Funding and Investments)

Grundmittel

German higher education is publicly funded, and institutions have to follow the budgeting and accounting laws of German public administration. These laws, although set by the individual states, are more or less similar across the country. The main restrictions derive from rules such as:

- the line item budgets (representing expenditure categories) are fixed prior to the fiscal year;
- the budget may not be spent 'across' line items;
- institutions do not get lump sum funding for staff expenditure, rather it is allocated, according to the *Stellenplan*, on a position by position basis—thus, institutions cannot spend personnel funds for other purposes, even if this is deemed to be necessary and appropriate; and
- funds (unspent balances) may not be transferred to the following fiscal year.

The annual budget, in which the state subsidies for the individual institution is presented, is included in the state law. The budget is subdivided into expenditure categories (line items) and positions (for personnel—described in the so-called *Stellenplan*). The budget is an integrated budget for education and research. Teaching and research are not funded separately.

Usually the budget is already subdivided according to the institutional structure, and the positions are already assigned to the departments and institutes. The budget thus pre-determines the total expenditure process for the fiscal year.

The public (basic) funding of institutions of higher education is—apart from some exceptions (see below)—not the result of using a formula for calculating budget components. The funding is based on institutional budget requests, each approved—in a process of budget negotiations—by the authorities on the basis of institutional assessments (allowances by reimbursement). The starting point is the *Stellenplan* of the last year. Therefore, the budgeting process can be characterised as incremental and input-oriented. The amount of *Grundmittel* a university or Fachhochschule receives in terms of allocations is not influenced by its actual number of students. (See also Tables 4.2 and 4.4.)

During the last few years in four *Lander*, a small part of the budget is allocated by means of formula funding. These states are: Niedersachsen (one per cent of the budget), Nordrhein-Westfalen (2.8 per cent), Sachsen (5.2 per cent) and Rheinland-Pfalz (5.8 per cent).

In Nordrhein-Westfalen the funding base of the formula consists of the following elements:

- number of positions for scientific personnel;
- number of students (in first until fourth semester);
- number of graduates (weighted by duration of study);
- Drittmittel income; and
- number of doctoral degrees.

In Niedersachsen the parameters of the formula are:

- number of positions for scientific personnel; and
- number of students (within the normative length of the program).

In the near future also performance measures (number of graduates, number of doctoral degrees) will be used.

Investment

Financial investments in new buildings, equipment for new buildings and equipment above a certain threshold level (150 000 DM) is financed jointly by the *Lander* and the federal Minister of Education. The *Lander* ministers may decide to bear the total amount of these investments. However, if they want to receive federal money, they have to process the project through the

national planning procedure (*Rahmenplan*), in which the *Wissenschaftsrat* evaluates the application and a joint national body of the Länder and the federal government makes the decision on whether or not to allocate funds. Construction and maintenance of buildings is neither decided nor administered by the institutions themselves. Special *Lander* administration 'offices' (*Staatshochbauverwaltung*) are in charge of these tasks. Only the operating of the buildings is budgeted and administered by the institutions.

Final Remarks

There are signs that state governments (*Lander*) are willing to give institutions more flexibility with regard to the (internal) allocation of funds according to their own discretion, and with less limitations fixed in advance. In a few states (Hessen, Niedersachsen, Hamburg, Bremen and Nordrhein-Westfalen) some selected institutions have been provided with a certain extended flexibility to spend across the line items. In quite a number of states, pilot attempts are planned or underway to test 'block grant budgeting' (*Globalhaushalt*), which should give the institutions more leeway in the internal allocation of funds and positions and with respect to budget carry-over to the following fiscal year.

During the last few years in all the *Lander* the introduction of performance budgeting for the allocation of parts of the basic funding has been discussed. In four states, pilot attempts already have been made. It may be expected that all the states will introduce some form of formula funding in the coming years.

The Netherlands

Outline of the Higher Education System

The Dutch Higher Education and Research Act (WHW), which entered into force on 1 August 1993, regulates higher education, teaching hospitals and academic research in the Netherlands. Previous legislation provided to a large extent for ex ante regulation and planning, assigning a central role to government. The new Act, which has its origins in the 1985 policy document 'Autonomy and Quality in Higher Education', propagated the philosophy of steering from a distance and autonomous educational institutions. The guiding principle of this document and the new Act is to give the institutions greater freedom of policy, within the parameters laid down by government. Detailed ex ante control by the government has been replaced by ex post control of a more general nature. The government remains responsible for the macro-efficiency of the system and intervenes

only where necessary (selective control) in order to ensure that funds are employed effectively and that intended results have been achieved. Quality control is exercised by the institutions themselves, using external experts (in teaching and research assessments), and, on behalf of the government, by the Inspectorate for Higher Education.

The Dutch higher education system consists of 13 universities and 63 institutions offering higher vocational education. The latter, the so-called HBO institutions, are comparable to the German Fachhochschulen or the British (former) polytechnics, although the official length of their study programmes is longer: four, instead of three years. The 13 universities consist of a number of classical universities, three technical universities and one agricultural university. Their task is teaching and research, plus related services. The Netherlands also has an Open University offering distance education. HBO institutions are primarily occupied with teaching, although some are increasingly engaged in applied, contract research.

University students aim for a final qualification that is comparable to the master's degree. Almost all programmes have an official duration of four years. Medical programmes (including veterinary science) take a further two years; dentistry and pharmacy require one extra year. However, all programmes will lead to a degree after four years, for the extra years (in the subjects just mentioned) a professional qualification (degree) is awarded. A doctoral degree can be obtained after completing a dissertation, which officially takes research lasting four years. Research trainees are not regarded as (postgraduate) students, because they are part of the university staff and are paid a salary. However, recently the possibility was created for universities to take on doctoral students, who will receive a grant. Another postgraduate qualification is the so-called designer-certificate, awarded after two years of postgraduate training in special engineering programmes offered by the technical universities.

HBO students completing their studies receive a qualification that is comparable to a bachelor's degree. Some HBO institutions offer their graduates the possibility of upgrading this to a master's degree. This involves a full cost fee (there is no government funding for this) and one extra year of study, usually partly in a British university (polytechnic).

At present (1995–96), the HBO sector is the largest, with 270 400 students enrolled either full-time (85 per cent of the students) or part-time (15 per cent of enrolments). The university sector has some 15 800 students (full-time, 94 per cent; part-time, 6 per cent), not counting the students that have used up the time allowed to them (usually six years) to be registered as a student. For the latter, two options remain: they can either be registered as an *auditor* (with no entitlement to student support, paying a higher tuition fee than ordinary students) or as an *extraneus* (no possibility to receive teaching and only allowed to take examinations, not entitled to student

support, and paying an examination fee). The number of auditors in universities is 14 800; the number of extranei is 7700.

The growth in the number of 'ordinary' university students has slowed down recently. In fact, the number has been falling for the last two years. This phenomenon is mainly due to demographic trends and partly to new governmental student aid policies. For the HBO sector, enrolments recently have stabilised. However, for this sector the government still predicts some growth as a result of its policies announced last year. For the future, HBO graduates will be prohibited from taking up a state-funded university study.

Budget

The income of universities and HBO institutions derives from three so-called flows of funds. Apart from these, there are tuition fees and examination fees paid by students. The first flow of funds includes the basic block grants allocated for teaching, research and related activities. For HBO institutions the block grant only covers teaching tasks. The first flow of funds also contains a number of specific (targeted) allocations, the most important one being the compensation for unemployment benefits which are paid by the institutions themselves to laid-off staff members. If we exclude the grants paid to academic hospitals (which cooperate closely with universities), the first flow of funds to universities for 1995 (in Dutch guilders: Dfl) was Dfl 4100 million, with the block grant accounting for 91 per cent of this amount. For HBO institutions the corresponding amount is Dfl 2440 million (95 per cent of this is block grant).

The first flow of funds (i.e. the core funds) is supplied by the Ministry of Education, Science and Culture. Agricultural institutions (one university and six HBO institutions) receive their grant from the Ministry of Agriculture. The way the block grant is calculated and built up is described in the next section. Although difficult to determine, we estimate that 36 per cent of university core funds are for covering the cost of teaching, and 64 per cent are for research activities. In practice, though, universities are allowed to determine their own distribution of funds over teaching and research. They can also make their own distribution over faculties, departments and other institutes.

The second flow of funds are allocations for research allocated through the Dutch research council, NWO (Netherlands Research Organisation). This research council pays salaries of researchers (and support staff) working either in NWO institutions (40 per cent) or in universities (60 per cent). It also contributes partly to other costs (mainly investments); however, the larger part of material and overhead costs are to be paid by the receiving university. NWO acts as an intermediary in granting funds for separate research proposals submitted by (teams of) individual researchers that seek

funding for their projects. Projects are funded on a competitive basis. Research council funds represent about Dfl 255 million of university income.

The third flow of funds concerns contract research and contract teaching carried out for government, non-profit organisations, private companies, charitable boards, and the European Community. For universities this supplementary source of income has been growing fast since the early 1980s. It now represents about 15 per cent of university income for teaching and research (i.e. not counting income from other services provided by universities). For the HBO sector it is difficult to obtain figures for income from contract work. Surveys reveal that it nowadays lies in the neighbourhood of 8 per cent of HBO income.

For all modes of attendance a tuition fee is required, which is equal for HBO and university students. The rate is highest for auditors (primarily 'slow' students): Dfl 3150 (Dfl); for full-time students it is Dfl 2250; for part-time students it equals Dfl 1700. The extraneus fee is Dfl 1300. Fees are not compensated by the government (as is the case for UK students), although the student support system includes a small compensation for tuition fees. For the coming years, fees are supposed to be raised considerably, while the auditor fee will be liberalised (institutions are free to set their own level).

Overlooking the income from recurrent funds to universities and HBO institutions (excluding academic hospitals, interest, and other revenues from activities not related to research or teaching) the following shares can be calculated:

Source of Funds	*Universities*	*HBO Institution*
Block grant and other core funds	**73%**	74%
Tuition fees	**7%**	18%
Research council grants	**5%**	
Contract teaching, contract research	**15%**	8%
Total	**100%**	**100%**

For universities' and HBOs' capital costs the government also has a budget available. From 1994 (HBO) and 1995 (universities), this budget is integrated into the recurrent (block) grant. HBO institutions and universities nowadays own their buildings and land. The HBO institutions had to 'buy' their property from the government (through loan financing) and from 1994 receive a part of their block grant (i.e. per student) funding as a compensation for capital costs. Universities received their estate property from the government at zero cost. To cover all maintenance and investment costs from 1995 they have to rely on their block grant (lump sum), which

was raised in 1995 through the inclusion of the university investment budget (Dfl 170 million). However, universities argue they require at least Dfl 300 million annually to reasonably cover infrastructure costs. On the other hand, they are free to buy and sell property and operate on the capital market.

The Formula

The funding of universities and HBO institutions takes the form of a central government grant, calculated on the basis of a general formula. The yardsticks applied in the formula relate to the nature, extent and implementation of the institutions' activities, i.e. mainly teaching and research. The central government grant is fixed by the Minister for each institution. For reasons of calculation, the budget is separated into a teaching component and a research component. Higher education institutions have been funded since the early 1980s by means of a block grant. Along with the introduction of the Dutch Higher Education and Research Act, the funding formulas for determining the size of the central government grant to institutions were amended; for the university sector a new, highly simplified funding model came into existence for the 1993 budget. For the HBO sector, recently a number of simplifications were carried out. For the near future, a revised model is expected. In the final section of this chapter we will discuss future plans for the funding mechanism.

We will now discuss the method used for the calculation of the teaching and research parts in the basic government grant (first flow of funds) allocated to universities. The method is called HOBEK, which is short for higher education funding, and is largely formula-based.

Education

For university teaching the HOBEK model allocates two components:

- a teaching part, based on student and diploma numbers; and
- an interwoven part.

Through the first, formula-based part, funds are allocated to universities on the basis of the number of registered students and the number of first (master's) degrees and professional (e.g. physician, dentist) degrees. Only students that have been registered no longer than the normative length of their programme (usually four years) qualify for funding. This implies that students in their fifth or sixth year, as well as auditors and extranei, are not funded. Students who are in the so-called second phase of their medicine, dentistry, veterinary science and dentistry programmes are funded only for the normative period (two years, one year) of this phase.

The tariff per student and the tariff per diploma is the same. There is a distinction between two categories of students and diplomas, namely programmes in arts, humanities, law, social sciences and languages on the one hand, and programmes in science, engineering, agriculture, and medicine (including dentistry, pharmacy, and veterinary science) on the other hand. For the former (the 'inexpensive' subjects) the tariff is Dfl 5000; for the latter (the 'expensive' programmes) the tariff is 50 per cent higher: Dfl 7500. A time lag of two years is applied: for the 1995 budget, registered students and diplomas for the academic year 1993–94 are used in the calculations. Therefore, no average (e.g. over a three-year period) is used. This feature, which is currently in discussion, may lead to sudden changes in a university's (teaching) funds.

In 1995, total student-plus-diploma funding amounts to Dfl 870 million, which is about 23 per cent of HOBEK funding. One has to note that this part of funding is not open-ended: a reduction factor is applied if this HOBEK component exceeds the budget which is made available by Parliament for this part of the universities' teaching costs. Therefore, the HOBEK model is a distribution model, not a 'claim model'. Rising (teaching) performance does not lead to a higher budget for the sector as a whole. However, it may lead to some universities improving their relative funding position vis-a-vis each other. The available teaching budget is increased annually by taking account of inflation and pay rises in the higher education sector, while it may be reduced to implement cut-backs. For the year 1995, the resulting reduction factor was 0.98.

The second part of the teaching budget is called interwoven, as it is included to allow for the fact that academic research and academic teaching to a large extent are intertwined. The existence of this seemingly odd feature of the HOBEK model dates back to discussions in which a combined funding model for the HBO and university sector was proposed. In these discussions, which also addressed the funding tariff per student, it became clear that university teaching was considerably more expensive than HBO-teaching. The interwoven component therefore was introduced to allow for this fact. This is the reason to discuss the interwoven component as part of the teaching component of HOBEK.

The level of the interwoven component is dependent on the combined amounts of the teaching budget and the research budget (see below) per university. It is a 14 per cent (one-seventh) 'premium' upon the student-plus-diploma funding and the research funding. In 1995 the interwoven component represents about 13 per cent of HOBEK funding. Because, as we will see, a part of a university's research allocation is fixed, a part of the interwoven allocation is also constant (i.e. independent of student or diploma numbers).

Research Funding

The allocation of research funds to universities nowadays consists of three separate components:

- education related research;
- funding of doctoral programmes; and
- strategic research.

The education related research allocation is a basic allocation to each university that intends to express the fact that research is a prerequisite for university teaching. The allocation of this component accordingly depends on the teaching load and the teaching programmes in each university. For the university sector as a whole, a maximum of 15 per cent of available research funds is used for allocations under this heading. The allocation is calculated by using a formula: it is a 40 per cent premium on the teaching tariffs. Therefore, the available budget for this component takes place in proportion to the teaching budgets (excluding the interwoven component) of the universities.

The combined effect of the teaching component, the education-related research component and the interwoven component leads to the fact that the tariff per unit (student or diploma) in the inexpensive programmes is Dfl 8 000. This amount (which excludes the tuition fee) consists of the following components:

- 5000 (the basic teaching tariff);
- 2000 (= 0.4 * 5 000—for education-related research); and
- 1000 (= 0.2 * 5 000 due to the interwoven component, which in turn is built up from two components, a one-seventh mark-up on the unit teaching tariff and a one-seventh mark-up on the education-related research tariff per unit, giving a total mark-up of 1/7 + 1/7 x 2/5 = 0.2).

The corresponding calculation for the expensive programme rate leads to a unit tariff of Dfl 12 000.

The second component in the research funds is an allocation based on the number of doctoral degrees awarded (again, a two-year lag is applied). It is a compensation (premium) for doctoral work carried out by graduates in universities. Two rates apply:

- a rate of Dfl 60 000 for 'inexpensive' doctoral theses (e.g. in social sciences and humanities); and
- a rate of Dfl 120 000 for expensive ones (in exact, technical, and medical disciplines).

In the 1995 budget Dfl 245 million is allocated in terms of doctoral-related research funds. This is some 6.5 per cent of the total HOBEK allocation. If the number of doctoral degrees increases, funds will be transferred from the strategic research component (see below).

The third, and most important part, of research funding (in 1995, Dfl 1 760 million—47 per cent of the HOBEK allocation) is represented by the strategic research component. This component represents some 75 per cent of the 1995 HOBEK research funds allocated to universities. The name of this component derives from the fact that the Ministry intends to fund research that has strategic relevance, meaning 'relevant to society'. The Ministry and the universities have agreed that quality and social relevance are to play an important role in allocating this component. However, universities regard a reshuffling of research funds a major intrusion into their autonomy and so far have been able to avoid reallocations. Thus, this part of research funding is still based mainly on historical allocations, with over the years some additional allocations made to relatively new or 'growing' universities. Thus, unlike for teaching, most of the funds for research are not appropriated in a normative way.

The latter, of course, is due to the character of research: research activities can hardly be captured in terms of volumes and prices. However, in the past, attempts were made to incorporate incentives into the funding mechanism in order to capture and steer somehow the outcomes of research. An important attempt was made in 1983, when the system of 'conditional funding' was introduced. The goal of this system was to enhance quality and coherence in university research and to assess the relevance of research to society. To this end, university departments (faculties) had to draw up research programmes that should conform to the following conditions:

- a sizeable scale of the programme (at least five full-time equivalent of researchers involved);
- the programme should extend over five years; and
- the quality of the programme was to be examined by independent, external peers, selected from the disciplinary fields.

One of the basic ideas of this was to have differences in research quality translated into funding decisions. However, due to the opposition of universities this was aborted. The research budget of each institution in 1983 was more or less maintained and frozen for the ensuing years. In this way the conditional funding system lost part of its bite, although from that year on university faculties were much more focussed upon generating research output and revealing that output, as a means of justifying the public funds granted to them. A negative effect of the system was its contribution to the idea that for academics research is the most important part of a university's activities and the main determinant of a university career.

From 1993 on, the universities have agreed to have their research programmes examined in a system of peer review (i.e. by international committees of independent experts in the respective disciplines). These research assessments are carried out every six years under the auspices of the Association of Universities in the Netherlands, an organisation that looks after the interests of the university sector. The goal of the assessments is to look at the quality of research programmes in terms of scientific productivity, scientific relevance and scientific long-term viability. The assessments produce ratings for each university; however, not as a single rating but as qualification on a number of dimensions. Because the assessment reports are published, they perform an important accountability function and are used as an input in the formation of a university's research policy. However, unlike in the United Kingdom, the results are not used as inputs in the Ministry's decisions on research funding. The same holds for the results from the assessment of the quality of teaching. For this, the VSNU also carries out peer reviews.

For the funding of HBO institutions the following basic formula generates the amount of funds allocated for teaching:

amount = funding tariff x dynamic demand factor x enrolment

There are two funding tariffs for full-time students, one for programmes with a strong practical character (Dfl 7790 in 1995) and one for programs with a social science (so-called gamma) character (Dfl 6900 in 1995). Previously there were six, so-called profiles. Still, there are some special arrangements for students in performing arts, music, theatre and teacher training. For part-time students, 75 per cent of the rates apply. Should tuition fees be changed, the level of the funding rates also is adjusted.

The funding rates are not applied to the number of registered students, but to an estimate of the teaching load ('student demand'). This teaching load is in turn dependent on enrolment and a so-called dynamic demand factor. The formula for this factor is as follows:

dynamic demand factor = [DG x 4.5 + DO x 1.35] / (TG + TD)

where:

DG	the number of HBO-degrees awarded (during previous year)
DO	the number of students that have dropped-out (during previous year)
4.5	the normative funding period for HBO-graduates (4.5 years)
1.35	the normative funding period for HBO-drop-outs (1.35 years)
TG	total period (in years), during which graduates have been registered before graduation

TD total period (in years), during which drop-outs have been registered

The dynamic demand factor can be interpreted as the ratio of the normative funding period and the actual registration period for graduates and drop-outs. In case graduates or drop-outs take more time before leaving the HBO institution, the operation of this factor implies that the HBO institution receives less funding. In case an institution would be able to bring down the time to graduate or the time to drop out, this will only affect funding if the graduation (or success) rate rises simultaneously. This is due to the fact that total enrolment also decreases along with shorter periods of stay. An HBO institution thus has two options to raise its funding amount:

- through a permanent rise in numerical success rates; and
- through a rise in student intake.

However, both options bring larger costs for the institution. In all cases, the funding formula intends to stress performance, especially in terms of graduation rates.

Final Remarks

For both sectors, universities and HBO institutions, the funding formulas are output-oriented, rather than input-oriented. Where necessary, the outcomes of the funding models are adjusted to stay within the limits of the overall budget for higher education and research. Student numbers as such do not qualify for funding, because in both sectors the normative length of the programmes is taken into account. For universities, due to the relatively large size of the strategic research allocation, the share of HOBEK funds that is tied directly to student numbers, diplomas or doctoral degrees amounts to 46 per cent of the HOBEK allocation. The other 54 per cent is more or less historically determined and thus represents a constant amount. The research funding components only for some 25 per cent are tied to quantitative measures. The largest part of the research budget is allocated to universities on a historic, or rather incremental, basis. Unlike in the Scandinavian countries and Germany, teaching and research are not funded on a separate basis. The Humboltian idea, that academic research is a prerequisite for teaching, still affects the method and level of university funding.

Before 1993, when HOBEK was introduced, a considerably more differentiated and complicated model was used for the funding of universities. It included more tariffs (staff:student ratios), more components, and led to separate budgets for personnel (academic and support staff) and material costs. Moreover, it had been adjusted (by bringing in more details and correction factors) during the period it was in use (1984–1992). The

present HOBEK model is very simple in structure. It makes a distinction between cheap and expensive 'performance units' (students, degrees), and personnel and other costs are integrated into the funding tariffs. The combined allocations for teaching and research in the first flow of funds are handed over to the universities as a block grant—a lump sum, which can be spent at the institution's own discretion, provided the legal tasks are performed adequately.

For the HBO institutions, almost the entire teaching allocation is formula-based. There are no floors in the allocation, except for special arrangements taken for the funding of art schools and a few teacher training institutions. Just like HOBEK, it also leads to a lump sum.

In last year's policy plans, the government has announced a change in the funding mechanisms. For the HBO institution, the Minister of Education wants to use a more output-oriented model. For the university sector, he wants to introduce 'capacity funding'. However, before replacing the HOBEK model, he wants the present HOBEK model to be changed in order to prevent universities from 'competing for students'. Through its policy the government wants to stabilise student enrolments in universities. Therefore, a version of HOBEK will be used as a transitional funding model for the coming year (1997) only, in which student numbers and diploma numbers receive less weight in the formulae. After many rounds of discussion between Minister and VSNU, the following amendments to HOBEK were accepted by the universities (in May 1996):

- the interwoven components will be 'frozen' and transformed into constant allocations;
- the education-related research component is also made student- (and diploma-) independent;
- in the teaching (student plus diploma) funding component the weight attached to students will drop from 80 per cent to 10 per cent, the weight attached to diplomas will drop from 20 per cent to 10 per cent, and the remaining part of the teaching component will be 'frozen'; and
- in the doctoral research component a (four-year) moving average will be used.

It has to be stressed that the revised HOBEK model (called STABEK, denoting a STAble funding model) is only a temporary model, primarily intended to accomplish a non-competitive situation and an atmosphere in which institutions will look more at their internal situation instead of looking at competitors. More attention will be paid to improving 'teaching quality'. To this end the Minister has set aside a pool of funds, both for universities and HBO institutions, from which the institutions—after presenting plans—can receive extra funding (also to partly make up for the effects of cut-backs). (We can refer to similar plans described in the chapter on the Swedish higher education system.)

For the future, the Minister has expressed a desire to base funding on separate contracts with universities. In the contracts, agreements will be included concerning the number of degrees to be issued in a ten-year period, together with agreements on the volume and type of research. The Minister, therefore, wants to fund a specific 'capacity' which is intended to lead to a specified volume of performance in terms of teaching and research.

However, the climate in which all of this is taking place cannot be characterised as very friendly. For example, the fact that individual universities and HBO institutions remain responsible for paying unemployment benefits to previous employees, out of a subsidy that has proven to be insufficient, makes negotiations difficult. Also, the recent transfer of the universities' estates together with the inclusion of the university investment funds into the universities' lump sum met with criticism, because the (investment) funds prove to be insufficient in meeting the cost of building maintenance and improvement. Finally, due to demographic trends, the number of new entrants in universities and (to a lesser extent) HBO institutions is declining. This will have important downward effects on the sector's budget and, consequently, the relations and atmosphere between Ministry and institutions.

Sweden

Outline of the Higher Education System

Since the restructuring operation of 1977, the Swedish higher education system has been a unitary system (*Hogskolan*), consisting of 10 universities, 16 university colleges (i.e. polytechnics), specialised institutions (29 colleges of health sciences and seven art colleges) and two private institutions. In the academic year 1994–95 there were almost 270 000 individuals registered in higher education. This number includes distance education (26 300 students) and commissioned education. The universities (including the two private institutions) served some 177 500 students; university colleges were responsible for 70 600 students. Health colleges and art colleges registered 25 600 and 2 200 students respectively. In the 1990s the number of individuals applying for higher education programmes has increased year by year, and there are insufficient places to meet the demand. It is estimated that roughly one-third of all those who apply in any particular term must be refused a place in higher education. There has been some improvement in the last two years in the balance between supply and demand. There is, however, considerable variation between different study programmes and institutions.

The Ministry of Education and Science is responsible for the national higher education policy. The allocation of funds takes place through the budget proposal made by the government and accepted by Parliament. Until 1993, a central planning agency (National Board of Universities and Colleges, or Universites och Högskoleämbetet) was responsible for drawing up the budget and admission of students. In 1993 another major reform, which represented a drastic change from the regulatory framework of 1977, took place. Reforms were carried out in order to create an open system of higher education (freedom of entry for private competitors, who, after meeting quality criteria, are also accepted for funding), a system of quasi-contracts between government and universities, performance related lump-sum funding, external quality assessment and audit, deregulation, and more managerial governance.

The planning system changed from detailed plans by parliament to a system of quasi-contracts between government and universities, where the government specifies a maximum available funding and leaves multiple options open for the university to achieve this maximum. Below, we will describe how the budgets connected to these contracts are calculated and how they are related to performance measures.

An external quality agency was set up to carry out quality assessment and quality audit functions. After the shift of government in 1994, this merged with another agency to form the National Agency for Higher Education (Högskoleverket), with a wider mission to produce an overall picture of how the universities develop and to make policy recommendations. The primary responsibility for quality improvement is with the individual universities, which are obliged to present a plan and be open for audit. Deregulation measures meant that a large number of issues previously decided by the government and the former national bureau for universities are now decided by the universities. This primarily concerns the composition of study programmes (under the government-imposed general framework of bachelors and masters degrees), admissions procedures, career patterns for academic staff, the appointment of professors and internal organisation. More powers are given to the (government appointed) vice-chancellor.

Budget

It is estimated that total expenditure for higher education was SEK 31.5 billion in fiscal year 1994–95. This figure includes SEK 5.4 billion in terms of study grants to students in higher education, and SEK 1.9 on account of private institutions. This means that universities and university colleges spent some SEK 22.9 billion on education and research/postgraduate degree programmes. Expenses are covered by government grants and external income. As in other Nordic countries, there are no tuition fees in Sweden.

Direct state and regional authority grants accounted for 70 per cent of the revenues; research grants by research councils comprised 22 per cent, including research training. Revenue produced by commissioned activities was responsible for the remaining 8 per cent. Universities and institutions with permanent research resources represented 83 per cent of expenditure on higher education. The corresponding figure for small and medium sized university colleges was 11 per cent; for colleges of health sciences, 5 per cent; and for university colleges of fine arts, 1 per cent.

On 1 July 1993 a new allocation system was introduced for the funding of basic higher education (i.e. excluding research and postgraduate education) came into force. The previous input- (cost-) oriented system was replaced by a goal- and performance-oriented system. In March 1994 initiatives were developed in order to alter the financing of arts colleges. Nowadays there are eight arts categories, but they apply only to a few schools each. More importantly, in January 1994, ideas were developed in order to incorporate the allocation of building, construction and equipment funds into the formula used for allocating the funds for current expenses. These measures were executed in the academic year 1995–96.

Funds are made available as a lump sum. Year-end balances may be kept and carried over to the next budget-year. Deficits have to be covered by the institutions themselves. On the basis of figures for actual student numbers and student results at the end of the year, the final institutional allocation is settled with the budget.

The Formula

The funding of teaching is separated from the funding of research. This means that there are separate grants, earmarked for teaching and research.

Teaching: Education Contracts

For the allocation of teaching funds there are two funding bases.

- *The number of credits accumulated by students during the academic year*

  In order to serve individual preferences, the Swedish educational programmes are offered in the form of a series of single subject courses, out of which students can build up their own programme. For the range of final qualifications on offer specific amounts of credit points are prescribed in examination regulations. Depending on the effort to be undertaken, each subject course, if passed successfully, leads to a

specific number of credits points. Roughly, one week's work leads to one credit point and, as the Swedish academic year consists of 40 weeks, in one successful year a student can accumulate 40 credit points.

- *The number of students*

  The number of students is expressed in full-time equivalents. Just as in the case of the study load (expressed in units of 40 credit points), for a higher education institution this number represents a maximum that the government is willing to finance during the academic year.

Apart from the funding base, there is a (national) funding tariff, the level of which depends on the cluster of disciplines to which full-time students or yearly credit loads belong. The student tariff consists of an overhead tariff (column 1 in the table below) and an activity (i.e. direct teaching costs) tariff (column 2 below). The tariffs were determined on the basis of a special investigation into the cost of basic higher education. This investigation determined the cost of teaching, services and overhead in the cluster of law and humanities as well as in some social science subjects. This was used as a basis to which weights were applied for determining the tariffs of other subjects. For both funding bases, five tariff categories plus a 'miscellaneous' category are distinguished. For the academic year 1994–95 Table 4.6 (below) presents the tariffs (ersättningsbelopp). Taken together, the student tariff and the performance tariff generate the yearly per capita allocation for a full-time undergraduate student (in each of six categories) that has succeeded in collecting 40 credit points.

The annual teaching budget T for institution i in year t is calculated by applying the following formula (which, for the sake of clarity, disregards adjustments due to compensation for price inflation):

$$T_{i,t} = (S_{i,1,t}*TS_{1,t} + C_{i,1,t}/40*TC_{1,t}) + (S_{i,2,t}*TS_{2,t} + C_{i,2,t}/40*TC_{2,t}) + \ldots + (S_{i,6,t}*TS_{6,t} + C_{i,6,t}/40*TC_{6,t})$$

where:

$T_{i,t}$	teaching budget for institution i in year t
$S_{i,j,t}$	number of full time equivalent students in institution i enrolled in programmes belonging to cluster j (j=1,....6) in year t
$TS_{j,t}$	tariff per full time student (overhead plus direct teaching costs) in programmes belonging to cluster j (j=1,....6) in year t
$C_{i,j,t}$	number of credits accumulated in institution i in subjects belonging to cluster j (j = 1,....6) during year t
$TC_{j,t}$	tariff per annual performance equivalent in subjects belonging to cluster j (j = 1,....6) during year t

The student tariff will from 1995 on include a compensation for capital costs (including rents for the university buildings).

Table 4.6 *Tariff (in Swedish Crowns) per Student (fte) and for Student Performance (year-load, i.e. 40 credits) in Swedish Higher Education, Academic Year 1994–95*

Area	***Student Tariff Overhead***	***Student Tariff Direct***	***Student Tariff Total***	***Performance Tariff (year-load)***
Humanities, theology, law, social sciences	**5758**	8266	**14024**	14349
Science, engineering, pharmacy, health studies	**16862**	21174	**38036**	33850
Dentistry e.s.	**7917**	26826	**34743**	42035
Medicine	**8431**	38409	**46840**	59314
Pedagogy*	**5758**	21605	**27362**	33547
Miscellaneous	**13778**	18161	**31939**	26777

* *Excluding the practical part of teacher training*

The total amount of money made available for teaching is laid down officially in a contract, negotiated between the Ministry of Education and each individual higher education institution. The contract runs over a three-year period. The contract states the maximum number of (full-time) students and the minimum amount of student results to be funded, as well as the maximum teaching budget (ceiling amount) for each year. Furthermore, the contracts state target values for the number of degrees to be issued during the three-year period, including professional degrees (e.g. for teachers, dentists, etc.).

The education contract also provides for extra resources intended for special tasks, for instance for giving courses in 'small' programs such as egyptology, seismology and celtic languages or for developing courses in new fields (e.g. environmental technology). However, not all special assignments are tied to extra funds. The results shown during the three-year period form the basis for negotiations about the new three-year contract. The only condition tied to the spending of public funds in this respect is that the long-term goals of the education contract have to be fulfilled.

The teaching budget is based on projections of student numbers. However, institutions are free to take on more students, though this will not affect their budget.

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Research

As mentioned above, the funding of research is separated from that of teaching. For research, the allocation system dating back to the reforms of 1977 is still in place. Research funds for covering costs of research staff are allocated incrementally by the Ministry of Education. Next to the direct research funds, there are indirect funds allocated through Research Councils that supply funds to researchers on the basis of project proposals. Competing proposals are judged by peers. The allocation of funds for investments, interdisciplinary projects and information systems is supervised by a coordination board of the different Councils. Apart from Research Councils, private institutions also allocate considerable research funds to the universities.

In the 1994–95 fiscal year, revenue for research and postgraduate research training at Swedish universities and university colleges was SEK 13.9 billion. About 55 per cent of these resources took the form of government faculty allocations and other research and development allocations. The remainder came from research councils, other government authorities and public utilities, local authorities, companies, etc. The overwhelming proportion of research and development resources (98 per cent) went to universities and institutions with permanent research resources.

Final Remarks

Roughly two-thirds of the institutions' core budget (teaching and research grants, excluding Research Council allocations) is based on a formula. The formula contains an output- (performance-) based part and an input-based part. The input-element of the formula should—in the view of the government—make institutions more demand-driven. The performance (i.e. student results) element included in the formula is given a higher weighting than the input (i.e. student load) element for four out of five main subject areas (see table 4.1). On average 60 per cent of teaching funds are based on the number of credit points gained by students, while 40 per cent is based on the number of students. The figures 60:40 are a political compromise between 70:30 and 50:50 (70:30 was proposed to leave room for compromise). In other words, funding is related to performance, while performance can be many things.

Plans to include a quality premium into the new (1993) allocation model were abandoned. Originally the former government wanted quality premiums of, in total, 5 per cent of the teaching budget to be introduced. They were to be distributed on the basis of the universities' mandatory plans for quality improvement. The present government opted for a model without the quality premium, but where quality audit findings will be used in the regular budgetary process. However, it is still unclear how these will be used.

A thorough investigation of the effects of the 1993 funding arrangements was commissioned by the government. This was called RUT93 (Commission monitoring the 1993 reform) and it published its findings in 1995. Earlier there had been a report by a committee on the funding of universities (SOU 1994). So far, all institutions have produced sufficient outputs, although no-one knows what would have happened if they had not. Some universities, like Gothenburg University, have chosen to increase their volumes far beyond their obligations. Most have made some increases to make sure they reach the specified outputs. In all, this amounted to roughly a 10 per cent increase of the 'system'. The new government kept the idea of 3-year budgeting. There have been some minor adjustments to the assignments or contracts for each university. During the contract period, there is a kind of check on yearly results, but this is mainly through the fact that budgets are yearly and new decisions are made every year. In the budget of January 1995, the new government explicitly argued that universities had large amounts saved from year one and two, which they were 'allowed to keep'. In other words, there was no reduction for year three. It is important to note that cut-backs were not part of the agenda.

A reported effect of the funding system is that university departments pay more attention to drop-outs, try to track them and persuade them to continue their studies. This seems to question the cliche that concern for others is stronger when market mechanisms are absent. A similar effect is reported on quality audit and assessment: more attention is paid to evaluating current activities and, hence, making improvement possible. This so far counters the widely felt fear that a performance-related funding arrangement would bring about lower standards. A reported consequence is that the general status of teaching is rising in relation to that of research.

United Kingdom

Outline of the Higher Education System

The higher education system in the United Kingdom (i.e. England, Wales, Scotland, Northern Ireland) has a unified structure. After the abolition of the binary line in 1992, all polytechnics, central institutions (Scotland) and a few colleges of higher education obtained university status. Today there are 52 'old' universities (36 in England, six in Wales, eight in Scotland, two in Northern Ireland) and some 107 'new universities' (33 former polytechnics and 51 Polytechnics and Colleges Funding Council (PCFC) colleges in England, nine polytechnics/colleges in Wales, 14 central institutions in Scotland). More than 40 of the former polytechnics and colleges have changed their name to university. In total, there are over 180 higher education institutions, including a number of further education colleges, teacher training institutions and Local Education Authority (LEA) maintained institutions.

A distinction can be made between students in the United Kingdom according to the level of the course taken. Undergraduate students have the intention of achieving a first degree (Bachelor of Arts or national certificate). The bachelor's degree takes three years of study (in Scotland four years). Some former polytechnics and colleges offer higher national certificates and professional qualifications, most of them after two years of study. Postgraduate courses lead to master's and doctoral degrees or postgraduate diplomas, certificates and a range of professional qualifications. The most common higher degree is the master's degree, which can be distinguished into a taught master's degree (Master of Arts, Master of Science or Master of Business Administration), that can be obtained usually after one year, and a research master's degree (Bachelor of Philosophy, Master of Philosophy), that usually takes two years. Doctorate programmes, leading to a Doctor of Philosophy, usually take three years of research work.

There are three modes of attendance: full-time, sandwich and part-time. Full-time and sandwich students usually study more than 21 weeks per year. If one applies a weighting factor of 0.35 to part-time students, the sum of UK students (excluding Open University students) in December 1992 was 983 400. This figure includes students in all levels (first degree, postgraduate and other degrees). If one were to include non-UK domiciled students, this figure would rise to 1 084 900 students. Some 390 000 UK students are enrolled in the old universities (England, 285 000; Wales, 27 000; Scotland, 57 000; Northern Ireland, 20 600). The rest, 593 400 UK students, are in other institutions (most of them, 380 000, in the former polytechnics).

Figures for 1994–95, based on slightly different definitions, show a number of enrolments of students based in the United Kingdom and other European Community member states that stands at 1 313 800. The number of students domiciled overseas, other than the European Community, stands at 75.9 thousand. The total number of enrolments at English institutions stands at 1 389 600 in 1994–95. This represents an increase of 43 per cent between 1990–91 and 1994–95. Of these enrolments, 246 500 are at postgraduate level; 836 800 at first degree level; and 306 400 at other undergraduate level. The number of full-time enrolments is 907 400; the number of part-time enrolments is 482 200.

The rise in higher education enrolments is a prominent feature of the UK system. It has been supported strongly(even 'commanded') by the Government. From 1986 on, the participation rate for the reference 20–24 age group rose from 22 per cent to today's level of about 33 per cent. Expansion of higher education was far greater than expected in the Government's plans. In view of this, the Government announced a policy of 'consolidation' under which controls on the growth of student numbers would be applied in order to limit public expenditure. The Secretary of State

has asked the respective funding agencies (Higher Education Funding Councils) responsible for England, Wales, Scotland and Northern Ireland to control the number of students whose fees are compensated by Local Education Authorities and to limit the funds available for growth. This represents an example of the way the UK Government has increasingly tried to steer its higher education institutions.

Budget

Until 1992 the Universities Funding Council (UFC) and the Polytechnics and Colleges Funding Council (PCFC) were responsible for the funding of universities and polytechnics. In 1992 regional (i.e. for England, Wales, Scotland and Northern Ireland), independent, non-departmental Higher Education Funding Councils (respectively Higher Education Funding Council England, Higher Education Funding Council Wales, Scottish Higher Education Funding Council and Northern Ireland Education Council) were established. A Further Education Funding Council was installed for the colleges of further education.

Universities and colleges receive a block grant from their Funding Councils that is largely determined by formula (see next section). The grants enable them to carry out teaching, research and related activities. Funds are provided in the form of a block grant. Institutions are free to distribute this grant internally at their own discretion, as long as the funds are used for the purposes for which they are provided. The rest of the Council (exchequer) grant is made up of an Equipment and Furniture grant and a grant issued by the Computer Board (now Joint Information Systems Committee).

Most statistics on the income of UK higher education institutions still concern only the old universities. For this sector, figures for the academic year 1993–94 show that total recurrent income equals £5677 million. The old universities' recurrent income from Funding Council grants represents one-third of this amount. Income from tuition fees is 22 per cent of recurrent income. One has to note that the fees of home and European Community (EC) full-time students are paid by the government through the Local Education Authorities (in Scotland and Northern Ireland, they are paid directly to institutions). A sizeable part (almost 25 per cent) of the fees originates from 'non-EC overseas students' though. Income (mainly specific income) from research grants and contracts represents about 20 per cent of the universities' budget, with Research Councils responsible for above one-third of this amount. Research Councils support selected research projects in individual institutions and also provide support for some postgraduates. Other research grant income originates from UK charitable bodies, UK government, UK industry or overseas sources. The rest of total universities'

income originates from other services rendered (5 per cent), endowments and donations (9 per cent), and miscellaneous sources (10 per cent).

On the subject of tuition fees, we mention that in 1990–91 the balance in public funding was shifted from the cash-limited recurrent grant to tuition fees to encourage institutions to recruit more students. In 1991–92 the single fee was replaced by three band levels, rewarding recruitment for laboratory/workshop and clinical courses over classroom based courses. To slow down expansion, in 1993–94 tuition fees were pegged at 1992–93 levels and those for classroom-based subjects were reduced by 30 per cent. Government funding to compensate institutions for this lost fee income was transferred to the Funding Council's recurrent grant. In 1994–95 tuition fees were reduced by 45 per cent to encourage consolidation of student numbers and—once again—an amount was transferred to the Funding Council's recurrent grant.

Below, we will discuss the calculation of the Funding Council's grants for teaching and research. For the academic year 1995–96 the Higher Education Funding Council for England supplied funds totalling £3560 million to English higher education institutions (old and new universities, colleges). Funding for teaching and research was £3207 million. About 70 per cent of this amount was for teaching, 20 per cent for research and 10 per cent for other activities.

The Formula

The funds for teaching, research and related activities are largely formula-based. The formulae take account of the size and activities of individual institutions and the quality of their research. The formulae (to be described later on in this paragraph) were introduced in 1993–94. For the 'new' universities it replaced the 'competitive tendering' model that had been used for the funding of polytechnics from 1989 onwards. For the university sector, an experiment with competitive tendering in 1991–92 failed and was replaced by a 'core plus margin' approach (see below). In the tendering system the polytechnics were invited to place bids for extra student places, on top of the places already funded through the block grant. Institutions could determine their own prices (tariffs) per student (for the respective subject areas). Apart from the block grant and the extra funds received through tendering, polytechnics were allowed to recruit so-called fees-only students. These are students for which the institutions receive only tuition fees and no further council funding. Thus, competitive elements were introduced into the funding system. This met with a lot of criticism from the institutions, although simultaneously it led to a considerable increase of enrolments in polytechnics.

In the period leading up to the abolishment of the binary divide, two research assessment exercises had been carried out in the 'old' universities, respectively in 1986 and 1989. These were executed in order to align progressively the research component of the council grant with quality assessment ratings. In 1992 the third assessment took place, covering all institutions of the former Universities Funding Council and the former Polytechnics and Colleges Funding Council. The results of this exercise (i.e. the quality ratings per academic subject area) were used as inputs in the new research funding formula.

We will now discuss the formulae that has been used since 1993 in the process of allocating funds to institutions. It is important to note that funds for teaching, funds for research and income from tuition fees are separate and independent parts of the institutional allocation. The formula for teaching funds is price- (or efficiency-) oriented, the formula for research is quality-oriented, and the 'formula' for tuition fees is volume-oriented.

Education

The Higher Education Funding Council, from the overall amount for teaching, research and other related funding, determines the available funds to be distributed for teaching. This is subsequently distributed among institutions by using a so-called core-plus-margin approach. In this approach, the core is the part of an institution's grant for teaching that is taken forward from one year to the next, thus providing financial stability. The margin represents the part of teaching funds intended for the funding of additional student places, the development of infrastructure and the support for specific initiatives in teaching. The margin is allocated on the basis of competition. However, the core is also indirectly affected by competition, as we will see below.

The calculation of the core funds awarded starts with information provided by each institution on the distribution of its teaching funds and student numbers over the respective cost units, the so-called funding cells. These cell are defined by 11 academic subject categories (fields of study), two modes of study (full-time and sandwich versus part-time) and two levels of study (undergraduate and postgraduate-taught versus postgraduate research). All in all there are 44 (11 x 2 x 2) funding cells. The academic subject categories range from humanities, social sciences to science and clinical subjects. Because each institution is free to internally spend the Council grant over its cost centres, it is up to the institution to decide how much grant to allocate to each funding cell. Now the Average Unit of Council Funding (AUCF) can be calculated for each institution, by dividing the amount of Council funding in each funding cell by the number of UK and EC students in that cell. Thus, the 'public cost' per student place can be

compared between institutions for each funding cell, leading to a ranking of institutions. This allows a competitive element to be introduced.

The Higher Education Funding Council in its policy statements stresses that the Average Units of Council Funding should not be interpreted as representing the cost of teaching students in any particular category. They are a reflection of how each institution chose to spend its (current) grant within a constrained competitive process (for the next years grant).

On the basis of the AUCF-outcome and its place in the ranking, the Higher Education Funding Council decides how the institution's core funds for a particular academic subject area will be adjusted and how much it will receive in terms of margin (extra) funding. Core funding in each cell is affected by two factors:

- an adjustment to take account of the Government's estimate for (GNP) inflation (3.25 per cent for 1995–96); and
- a downward adjustment representing the government imposed 'efficiency gain' for that year (currently -3 per cent).

The efficiency gain (imposed on inflated core funds) is not only justified by the fact that institutions over the years can profit from rationalising their 'production process', but also is affected by the fact that the Higher Education Funding Council has to limit grants in order to stay within the budgetary ceiling imposed by the Secretary of State.

For each funding cell, those institutions with lower Average Units of Council Funding will undergo a smaller downward efficiency gain than the more 'expensive' institutions. In practice, a frequency distribution of Average Units of Council Funding is constructed for each cell. This distribution allows the calculation of the (four) quartiles. For instance, for the academic year 1992–93 there were 107 English institutions that provided teaching to 81 815 full-time students in the academic subject category 'Science'. The median Average Unit of Council Funding was £1914, the lower quartile was £1625 and the upper quartile was £2145. The institutions with science Average Units of Council Funding in the first quartile undergo the maximum efficiency gain of 3 per cent. Institutions in the second and third quartile receive a downward adjustment of two per cent, and those in the upper quartile an adjustment of minus one per cent. For the academic year 1995–96 the downward adjustment is calculated not by applying a step-wise function, but by using a continuous (logistic) curve that runs from a zero adjustment for those institutions with low Average Units of Council Funding towards a 3 per cent negative adjustment for institutions with high Average Units of Council Funding.

Margin funding is supplied in a competitive process. It is available for securing growth in student places and specific developments in teaching. The amount available is decided upon beforehand by the government. For the academic year 1995–96 the Higher Education Funding Council for England distributed £60 million in margin funding and £2210 million in core funding. Margin funding is distributed in three components: by use of a formula, through 'core proposals', and through specific infrastructure funds. Originally the plan was to distribute part of margin funding on the basis of an assessment of teaching quality by the Funding Council. However, this plan was abandoned.

Nowadays, formula-based margin funding, as it is available for specific funding cells only, is awarded to institutions depending on the relative value of their Average Unit of Council Funding. Those with the lowest Average Units of Council Funding will receive the highest proportionate increase, while those in the upper AUCF-quartile will receive no margin funding at all. In the present period of consolidation, formula-based margin funds are only available for part-time student places (£4 million is distributed by the Higher Education Funding Council for England in 1995–96), and there are no margin funds available to expand full-time student numbers. In previous years, the priority attached to part-time students relative to full-time students was 2:1 and the priority given to science and engineering subjects versus other subjects was 1.25:1.

Margin funding through core proposals is distributed to institutions that bid for additional student places in response to specific programmes. Past examples include support for higher education in geographically remote areas and two-year vocational diploma courses in science, engineering and technology. Institutions can bid for money for core proposals in funding cells in which they are not currently active. The name 'core proposal' derives from the fact that funding allocated to institutions whose bids are successful is incorporated into their core funding for the following year. However, in view of today's 'consolidation policy' there were no funds made available for core proposals by the Higher Education Funding Council for England in 1995–96.

The part of margin funds that is supplied in the form of specific infrastructure funds is also called 'non-consolidated funds'. It is supplied in some years to institutions in order to develop their infrastructure. These funds are distributed evenly to institutions in proportion to their core funds, but are not carried forward to the following year's core. In 1995–96, the Higher Education Funding Council for England awarded £56 million in terms of infrastructural margin funds.

The total of formula and core proposal margin funds is converted into student numbers using the individual Average Unit of Council Funding for each institution in each cell. (In previous years the lower quartile Average

Unit of Council Funding was employed for this division.) Institutions are allowed to refuse additional student places. Moreover, sometimes upper limits to student places exist, above which no additional places are awarded. The extra student places are added to the current year's student numbers supported by the Higher Education Funding Council to determine the following year's contract student numbers.

As regards the funding contract between an institution and the Funding Council, we note that the latter expects institutions to teach a minimum number of students for the available grant. This is stated in a funding contract. The contract states the number of students for which core funds for teaching are provided and also states the number of 'margin' (i.e. additional) students. If an institution registers fewer than this number, part of the grant will be withheld according to the shortfall in numbers. Previously, a shortfall in one subject area could be compensated by an excess in another area. From 1994–95 onwards, institutions may also be penalised if they over-recruit students receiving publicly-funded tuition fees. However, institutions are allowed to accept fees-only students on a cost-covering basis (primarily by taking in overseas students). For the year 1995–96 the total contract student numbers funded by the Higher Education Funding Council of England was 727 000 full-time students, representing a 1 per cent increase over 1994–95, and 410 000 part-time students.

To end this part on the funding of teaching we note that from 1993–94 on the Funding Council has engaged in quality assessment of teaching. This is achieved through a rolling programme of assessments by subject which involves institutional visits. Where quality is found to be unsatisfactory, the institution is allowed up to 12 months to remedy the situation. An institution with a subject that remains rated unsatisfactory after two visits by the Funding Council's assessors will have the relevant part of core funding (and student places) immediately or successively withdrawn.

Research

Public funds for research are provided under the dual support system: the Funding Council contributes to the salaries of permanent academic staff, premises and central computing costs, and research councils provide for direct project costs and make a contribution to indirect project costs. There are six research councils, funded by the Government through the Office of Science and Technology. They support research in their fields of interest, both in their own establishments and in universities. In the period 1992–1995 funds were transferred from the Funding Council's block recurrent grant to the research councils to enable them to meet more of their direct costs and to contribute to the indirect costs (overheads) of their projects. As far as Funding Council (UFC or HEFC) funding is concerned, we note that, especially as a result of the research assessment exercises, research funds are tied more and more to

research productivity and research quality. These exercises, by means of peer review, led to a rating of the different research subject areas. The assessments led to a series of selected cut-backs and a reshuffling of research funds. Therefore, the assessments were also called 'research selectivity exercise'.

We will at this stage disregard research council funding, and now discuss the funding of research by the Higher Education Funding Council.

For its research funding the Funding Council uses a method that dates back to 1993. The procedure leads to three components:

- quality-related research (QR) funding;
- development research (DevR) funding; and
- generic research (GR) funding.

In 1995–96 the Higher Education Funding Council of England distributed a total of £636 million under these three headings, quality-related research being the largest component (94 per cent); followed by generic research (3 per cent) and development research (2.5 per cent). Before actually distributing the funds, the Council decides on these percentages.

For quality-related research funds the volume and quality of research is decisive. Sums of money are made available within each of 72 subject areas, also known as Units of Assessment (UOAs). The amount of QR-funds allocated to each institution within each subject is proportional to a volume measure multiplied by a quality measure:

$$\text{Amount} = \text{Quality} \times \text{Volume} \times \text{Normative funding rate}$$

The quality of research is established by peer review in a Research Assessment Exercise (RAE), conducted every three or four years. The most recent Research Assessment Exercise for which results are available was conducted in 1992. In 1996 another research assessment is taking place. In the 1992 Research Assessment Exercise, each institution was awarded a rating, on a scale of 1 to 5, for the quality of its research in each unit of assessment. A rating of 1 (meaning 'poor') implies that the Unit of Assessment will receive no funding at all, a rating of 5 ('excellent') means that the Unit of Assessment attracts four times as much funding as a Unit of Assessment having a rating of 2 ('satisfactory'). The Higher Education Funding Council can vary the relationship between the RAE ratings and the quality measure applied in the funding formula to make research funding more or less selective. The results of the 1996 Research Assessment Exercise will be used for funding decisions for the academic year 1997–98.

The volume of research is measured in each Unit of Assessment using (in 1995–96) five separate components:

- research active academic staff (R), in full-time equivalents;

- research assistants (A), in full-time equivalents;
- research fellows (F), in full-time equivalents;
- postgraduate research students (P), in full-time equivalents; and
- research income from charities (C) (average of two-year's income from charities).

First of all, the separate measures are weighted and aggregated into full-time equivalents (fte) by using the following weightings:

R	1.0
A	0.1
F	0.1
P	0.15
C	0.2/25 000 (thus, an average salary of £25 000 is used for conversion of (C) into fte).

The data for A, F, P and C are updated annually, with the data for R derived from the most recent Research Assessment Exercise. Research active academic staff is the most important measure of research volume. Only those academic staff paid for from an institution's general funds are counted. That is, those funded by research councils, charities and other sources are excluded. This latter type of staff is expected to have all their costs provided for by the research council. The volume of income from registered charities usually does not cover all costs and therefore is treated separately. We note that in previous years the weighting for C was lower (0.05). All in all, the number of academic staff accounts for about 75 per cent of the QR allocation by the Higher Education Funding Council of England for 1995–96.

The nominal rate of funding per unit volume of each of the units of assessment is determined by previous levels of funding. The rates are adjusted by the Higher Education Funding Council to bring them within fixed ranges defined for four broad subject groups (clinical subjects, science and technology, non-science and non-technology, and education). Increases in QR funding are restricted to a level specified by the Higher Education Funding Council (15 per cent in 1995–96).

Development research funding is intended to support strategically important research areas in those institutions which have demonstrated research potential and which did not previously receive substantial research funds. Only 'new' universities (i.e. polytechnics) and a few colleges are eligible for DevR funding. Funds are allocated to these institutions in proportion to the number of research active staff in subjects rated 2 and above in the Research Assessment Exercise.

Generic research funding is a component of research funding that is targeted at encouraging institutions to bring in income from contract research. This income is called 'qualifying income'. Generic research funding was introduced only recently (1994), in place of a research component called contract research (CR). The CR component intended to reward an institution's success in attracting contract research income from outside sources (excluding research councils and charitable bodies), especially EC research contracts. Moreover, by taking account of the overhead recovery rate, contract research also rewarded institutions that were able to cover their overhead costs in doing contract research. Contract research funding was replaced by GR funding, which rewards collaborative research projects. Collaborative research is a type of contract research where the institution retains the intellectual property and publication rights to the related research. It is therefore research which does not have a single beneficiary and is regarded by the Government as important in its policy of wealth creation. The amount of GR funding available is distributed between the institutions in proportion to their qualifying income.

Apart from the recurrent funding for teaching and research, the Higher Education Funding Council supplies related funding for a wide range of purposes, including: the additional costs of operating in the London area; liabilities inherited by institutions previously under local authority control; copyright libraries; museums, galleries and collections; and minority subjects. This type of non-formula funding represents some 9 per cent of the recurrent funds supplied through the Higher Education Funding Council of England. For special initiatives (e.g. continuing education, library developments, special programmes) there is also a small amount available.

The Funding Council also funds capital expenditures, to help institutions maintain and develop their estate (land and buildings) and their equipment. Capital funding (10 per cent of the HEFCE's total funding in 1995–96) comprises estates and equipment funds distributed by formula; and funding for special building and maintenance projects. Formula-based capital funds represent 70 per cent of total HEFCE capital funds. These funds may be used by the institutions for estates expenditure and equipment purchase, and—from November 1994 on—also to service loans for new capital projects. The formula contains a minimum (floor) amount plus a sum calculated to reflect the level of teaching and research activity.

Non-formula based capital funds are supplied for designated projects (after institutions' bids for new projects or for continuing projects), either for new buildings or for long-term buildings maintenance.

Final Remarks

Funding higher education in the United Kingdom has undergone quite a lot of changes in the past decade and a half. The current 'grip' of the government on its higher education sector represents a major change from the autonomous (some would say, elite) status of (especially) the university sector in the years before the Thatcher-regime. The government has introduced competition among institutions, called for improved information on the quality of teaching and research, and especially required value for money in the use of scarce public resources. Thus, accountability and efficiency were (and still are) the key words in education policy. In the five years to 1993–94, public funding per student reduced by 26 per cent in real terms.

The role of the funding councils in these matters has not been confined to financial planning and provision of funds, but also was extended to the area of quality assessment. In research funding, a high priority is given to selectivity, rewarding quality. The funding of teaching is aimed at providing stability (through a core plus margin approach) to the institutions and—at the same time—forcing them to drive down the cost per student. Although many of the policy instruments used (still are) met with a lot of criticism, evidence suggests that quality has been maintained.

Of all recurrent funds supplied through the Higher Education Funding Council of England in 1995–96, about 90 per cent is distributed by formula. Because formula-driven funding methods are made public, the funding outcomes can be checked using information that is publicly available, thus enabling accountability. The funding methods were established after extensive consultation with the higher education sector.

Problems with the funding system centre upon the size of the 'efficiency gain' and the unavailability of sufficient and realistic funds (Margin Funds) for additional student places. Because a prominent role is played by the Average Unit of Council Funding in allocation decisions, institutions are required to make their own calculation of the cost for each type of student, per subject, level of study, and mode of attendance. This poses some problems, especially where presenting the relative cost of full-time students versus that of part-time students is concerned. The equivalence of one part-time student to 0.35 times one full-time student, that is used for statistics on student numbers, is certainly not based on cost calculations. Making teaching funds depend more on performance (output), instead of costs (inputs) would lead attention away from this. However, in turn this would require a thorough revision of the study programmes and the institutional organisation.

There is also criticism from the part of those institutions that do not have sufficient facilities (buildings, etc.) to teach additional students. Furthermore, additional student places are funded against the institution's own Average Unit of Council Funding. Therefore, institutions have little means to actually 'invest' in improvements of teaching quality.

A side-effect of the system of quality assessment in teaching and in research concerns the cost and bureaucracy surrounding evaluations of this kind.

Addendum: Formula-funding Initiatives in Germany (by D. Anderson)

In Germany, the committee of education ministers (Kultusministerkonferenz) installed a working group to investigate the possibility of introducing some form of formula funding. It was felt that, especially where the teaching budget is concerned, the German universities were not in an 'equal' position. The investigations sought to arrive at proposals for making the teaching budget more dependent on variables connected to teaching. Variables such as teaching load, performance and innovation plans may be playing a role in this. First, the working group presented an overview of the current situation in the respective states (Länder) of Germany with regard to the issue of formula funding. It concluded that only four states employed—to some extent—formula funding. These are: Niedersachsen, Nordrhein-Westfalen, Rheinland-Pfalz, and Sachsen. However, such formula funding only concern funds for non-personnel expenditures. The salary budgets continue to be distributed outside of a formula; in fact, in their yearly financial reports and budgets, universities often do not even include personnel budgets into their overviews. This is due to the fact that personnel expenditures can almost not be influenced at all by the institutions themselves.

Niedersachsen

In Niedersachsen just under 1 per cent of the total higher education budget is allocated by means of a formula. This only concerns so-called supplementary (i.e. margin) funds for teaching and research, falling within two categories: means for teaching assistants (*Hilfskraftmittel*) and means for material goods (*Lehrmittel*). Apart from a constant amount of Hilfskraftmittel, the extra funds are allocated using the following weights:

	Hilfskraftmittel	*Lehrmittel*
Students within normative course length	**66.7%**	50%
Full professor positions (Stellen)	**33.3%**	
Academic staff positions (Stellen)		50%

The normative length of the curriculum in Germany—the so-called *Fachstudiendauer*—is normally three to four years (six to eight semesters) for Fachhochschulen and four to five years for universities (usually nine semesters). For the category of Hilfskraftsmittel (teaching assistants) there is no further weighting scheme in use, while for the category of Lehrmittel (teaching materials) the following differentiation is made:

- Students within Regelstudienzeit
  - humanities/social sciences 1
  - science 3
- Academic positions
  - humanities/social sciences 1
  - science/engineering 3

Nordrhein-Westfalen

Nowadays, in Nordrhein-Westfalen 5.2 per cent of the higher education budget is allocated by means of a performance-oriented formula. Until 1992 supplementary funds for teaching and research were allocated on the basis of the number of academic staff positions and the number of students within the normative length of their programme (*Regelstudienzeit*). From 1993 onwards, other parameters and indicators are in use. For the 1993 budget, supplementary funds for universities and Fachhochschulen are distributed on the basis of the number of degrees (*Absolventen*). In 1994, a pool of funds was formed, to which each institution had to contribute 10 per cent of its core funds for teaching and research. Together with the supplementary funds, this pool was distributed on the basis of the number of degrees (*Absolventen*) per institution. In 1995, the 10 per cent contribution of each institution was doubled to 20 per cent. For that year, next to the number of graduates, each institution's success in attracting research council funds (*Drittmittel*) and its number of doctoral degrees (*Promotionen*) were taken into account also. Therefore, through these additional parameters, the institutional research performance is playing a role in the distribution of state funds. Drittmittel include research council funds, supplied by the German Research Council (the DFG), and research funds allocated by charitable foundations (e.g. the Volkswagen Stiftung, the Fritz Thyssen Stiftung and the Robert Bosch Stiftung).

For the 1996 budget, the institutional contribution to the 'pool' was raised further to 35 per cent of its core funds. For this year two additional parameters were included, i.e. the number of students in the first through fourth semester (the so-called *Grundstudium*) and the number of academic positions (*Stellen*). The weighting of the parameters for universities and Fachhochschulen is as follows:

	Universities	***Fachhochschulen***
Absolventen	**35%**	50%
Drittmittel	**20%**	10%
Promotionen	**5%**	-
Students in Grundstudium	**20%**	25%
Stellen	**20%**	15%

The number of graduates (Absolventen) is weighted by the time to degree (i.e. the actual duration of the student's education career), in such a way that graduates with a shorter time to degree receive a higher weight (up to 1.3) than those which take more time. Also a distinction in programmes and faculties is made: for graduates, doctoral degrees, students and academic positions, the weighting is 1:2.5:2.5 for social sciences/humanities:science: engineering; it is 7:2:1 for Drittmittel in the corresponding faculties/departments.

Rheinland-Pfalz

In Rheinland-Pfalz, 5.8 per cent of the higher education budget is allocated by means of a formula. In 1994, for the first time, funds for teaching and research were distributed on the basis of a formula that used the following parameters and weighting scheme:

- students within Regelstudienzeit, plus graduates 45%
- professor positions, plus 50% of other academic positions 20%
- revenues from research councils and foundations (Drittmittel) 30%
- Habilitationen* 2.5%
- doctoral degrees 2.5%

* *Habilitationen is a kind of additional degree (promotion, on the basis of research-work) after which a doctoral degree holder qualifies for a professor position.*

However, the number of students in Fachhochschulen is multiplied by 0.8. For the parameter 'academic positions', personnel in the categories medicine and engineering receive a weight of 1.5.

Sachsen

For the 1995 budget, in which 5.2 per cent is allocated by means of a formula, the state of Sachsen distributes non-personnel funds for teaching and research according to the following parameters:

- number of academic positions 30%
- number of students 40%
- Drittmittel revenues 25%
- doctoral degrees plus number of Habilitations 5%

Presently the information on the fourth item is unavailable. For this, the number of students is substituted. No weighting with respect to subject area is made here, with the exception of the number of academic positions, for which the following scheme is relevant:

- professors in science, engineering and veterinary science 2
- professors in other academic subject categories 1
- other academic positions 0.5

Source: Sekretariat der Standigen Konferenz der Kultusminister der Lander in der Bundesrepublik Deutschland: Differenzierung der Mittelverteilung im Hochschulbereich, October 1995.

Attachment A

The Relative Funding Model

In 1988, the Government made, as part of its higher education reforms, a commitment to the equalisation of the funding base of institutions.

To achieve this, a set of relativities were established between the average costs of delivery of courses in groups of disciplines (clusters) at the undergraduate, postgraduate coursework and postgraduate research levels. This is known as the Relative Funding Model. In its final version, the Relative Funding Model contained 10 cost clusters—five at the undergraduate level, three at the postgraduate coursework level and two at the postgraduate research level. Weighting factors reflecting the relativities between the base (or lowest cost) cluster and each of the other clusters were then established.

In addition, it was considered that a component of operating grant supported the development and maintenance of research infrastructure that was necessary to undertake research funded through other sources such as competitive grants. This was named the research quantum and was deemed to constitute approximately six percent of operating grant in 1990. For the purposes of the Relative Funding Model, an index of success in gaining Commonwealth competitive research grants was used as the basis for distributing the research quantum between institutions.

In order to assess the equity of funding allocations, the grant an institution ought to receive on the basis of the cost relativities established by the model was compared with the actual grant. Institutions were judged to be appropriately funded if the variation between the actual grant and the model grant was less than ±3 per cent. Institutions whose grants varied from the model grants by more than ±3 per cent were considered to be over- or under-funded.

Adjustment packages involving either grant adjustments, adjustments to targets or a combination of both were put in place for over and under-funded institutions with the intention of bringing all institutions; grants within a ±3 per cent variation from the model grant.

It is important to note that the Relative Funding Model was designed for use in the context of a once off equalisation of institutional grants. It is not used to equalise grants on an ongoing basis.

The Funding of Growth

Additional resources for teaching activities are provided in the form of funding for additional student intakes. Funding is allocated at levels to allow a permanent addition to intakes. As it takes at least three years to complete the requirements for an undergraduate degree, the funding of a permanent addition to intakes requires that funding is also required to provide places for students continuing through to their second and subsequent years to complete their degrees as well as for new intakes.

The formula currently used assumes a four-year program and a 75 per cent continuation rate between years. On this basis, each additional funded intake generates 2.73 places by year 4. This is in the table below.

Table 1: Flow Through Effect of Funding 100 Additional Intakes

	Year 1	***Year 2***	***Year 3***	***Year 4***
1st year	100	100	100	100
2nd year		75	75	75
3rd year			56	56
4th year				42
Total	**100**	**175**	**231**	**273**

The rate at which additional places have been funded has largely reflected the relativities established by the relative funding model.

Attachment C

Funding and Reporting Cycle

31 January:	Final Profile for current triennium submitted
31 March:	HECS census date (First Semester)
April:	Documentation for profiles submissions for forthcoming triennium provided to institutions
mid-May:	Government's decisions regarding resources for forthcoming triennium announced as part of Budget
31 May:	Submission of student collection files
30 June:	Profiles submissions due
	Submission of Staff and Finance collections files
August–October:	Profiles Visits
30 September:	HECS census date (Second Semester)
31 October:	Second submission of student collection files (load and HECS liability status files)
November:	Recommendations made to Minister regarding grant allocations for out-year of forthcoming triennium
December:	Ministers funding decisions published in Funding Report

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Appendix 5

A Note on Value Added

Value added (VA) can be defined as a measure of students' scholastic attainments in university which allows for differences in related scholastic attainment at the point of entry. The argument for taking it into account when institutions or faculties and departments within institutions are being assessed is 'that true quality resides in the institution's ability to affect its students favourably, to make a positive difference in their intellectual and personal development.' (Astin 1982, quoted by Pitkethly et al 1995).

Value added may be approached as a measurement problem, or as problem of process. The former concentrates on devising a valid measure of output, the latter on those processes in universities which enhance the student experience.

Measuring Value Added

Of the various possible output measures, the most satisfactory would be one which, like the American GPA, aggregates and averages student attainment levels—Higher Distinction (HD), Distinction (D), Pass (P), Fail (F)—from each of the subjects or units of a course. A software package is now available which can be used by Australian universities for computing GPA-type scores for any classification of field and student type. Information about the level of pass in each subject is available within universities. Performance data collected by the Department of Employment, Education, Training and Youth Affairs for all universities contains subject pass rates, but not grade of pass.

The only system-wide input measure which is available for value added calculations is the aggregate of standardised examination results from State or Territory Higher School Certificate (or equivalent) examinations and which admission agencies convert to Tertiary Entrance Ranks (TER) for the purposes of university entrance.

The concept of making allowance for initial differences is simple enough. The operation is more complex and more contentious.

The simplest method involves taking the difference between an output measure and an input measure, e.g. Tertiary Education Rank and GPA or some such equivalent. A crude value added can be calculated from tables

published by the Department of Employment, Education, Training and Youth Affairs showing Subject Pass Ratios (SPR) and the percentage of students with Tertiary Entrance Ranks in the top quartile. On the simple performance indicator of average Subject Pass Ratio, the established universities do best. But with a value added adjustment some of the 'second rank' come to the fore. For example if both Tertiary Entrance Rank and Subject Pass Ratio are split into 3 levels—top, middle and low—Wollongong and Swinburne show up as value added universities.

A somewhat less crude method than the above for calculating a VA score for a course would involve devising a scale based on the GPA and another based on the Tertiary Entrance Rank. The value added for the course is the ratio GPA:TER and could be used to compare similar courses in different institutions.

A shortcoming of the ratio method is that the weights given to input and output are arbitrary, and the more weight given to the input measure the more likely the VA score is to be exaggerated. One can imagine that universities or faculties which recruit students with top Tertiary Entrance Ranks would argue for a low weight; those with students with less illustrious ranks for a large one.

A more sophisticated approach which tackles the problem of weights involves a comparative method. The expected output score corresponding to each level on the input is calculated from national data over a period of several years. The VA score for a course or an institution is the average difference between expected and actual outcomes for all students. A positive VA score implies that the university experience has enhanced students' achievement relative to zero or negative VA scores. This approach is used, with examples from the United Kingdom, in the report of a project by the PCFC/CNAA (1990).

There are still measurement difficulties with the comparative method. For example—if we score HD=5, D=4, C=3, P=2 and F=1—an assumption that the difference between a Higher Distinction and a Distinction is equal to the difference between a Pass and a Fail. Some would dispute this. There are technical corrections which can be used to deal with the problem. For example instead of using an arbitrary weighting for Higher Distinction, Distinction, etc., standardised or Z scores can be computed. (For an example of the calculation, see Straw & Kaye 1995.)

Another difficulty of scaling is the so-called ceiling effect. The closer students are to the top of a scale initially, the more difficult it is for them to register improvement. Non-linear conversions such as log or probit can be made to correct for this effect. The trouble with such 'improvements' is that they make the formula more difficult to explain.

The interpretation of VA scores is not simply a matter of attributing improvement to teaching. Research shows that student academic attainment is related to entry score and to university experiences of which teaching is only one component. In fact it is difficult to separate out the specific contribution of teaching from all the environmental and motivational influences which contribute to that final scholastic outcome. We are on safer ground if we attribute the value added to 'the university experience' or, more cautiously, to 'the experiences of students during the period of their university studies'.

Using value added, or any unadjusted measure of student academic progress as an indicator in a competitive process, makes the assumption that university degree standards are similar across the system. This assumption might have been tolerable when there were only 18 universities but it is questionable now. If academic performance were to be used as an indicator system-wide it would be desirable to monitor standards, e.g. by discipline consortiums which checked samples of examination papers across institutions, or by some more formal arrangement of external examining or checking as in the United Kingdom and Denmark.

Value Added as a Process

Value added, considered as a process, is another term for good education practice. Among other things it may include quality teaching, student support systems, pastoral care, effective communication, monitoring of progress, and evaluation.

La Trobe University has embarked on a VA process exercise. Three reports are available which review the literature, identify and describe the various ways in which departments and schools can enhance students' experience of university, and report a case study in the School of History.

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Appendix 6

Performance-based Funding Survey

Preamble

The focus of this survey, which we are making for the Higher Education Council, is on the use of performance-based approaches for resource allocation decisions within institutions.

We are interested in all such approaches, whether they occur at institutional level, or Faculty, etc. level.

We have devised the following three matrices to obtain basic data on the incidence and nature of performance-based funding in the program areas of: *teaching*, *research* and *equity*. If you consider that the essential character of your institution's use of performance-based funding cannot adequately be reflected through responses to the matrix, please attach additional information, while still completing the matrix. Note that in the teaching matrix the attainment or otherwise of target load as a basis of resource allocation *need not be included* as a performance-based funding measure.

Where Faculties, etc. differ significantly in their approach to performance-based funding, the matrix may be completed at that level with Faculty, etc. responses being forwarded direct to the research team. Additional copies of the matrix are included to enable distribution to Faculties, etc. where this is appropriate. Alternatively the institution may wish to collate Faculty, etc. responses into a single overall response.

In either case, we would appreciate responses reaching us by 1 May 1996:

Dr Don Anderson
Centre for Continuing Education Annex
5 Liversidge Crescent
ANU ACT 0200

Phone: (06) 249 4623 Fax: (06) 249 4959

The research team also plans to visit a sample of institutions to assist it to gain a fuller perspective on performance-based funding facilities within institutions. Selected universities will be invited separately to participate in the visit round planned for May–June 1996.

Don Anderson (for the project team)
13/5/96

Performance-based Funding/Teaching Matrix

Sub-program or activity subject to PBF	*Level at which PBF operates (institute, Faculty, etc.)*	*Performance indicators used*	*$ at stake*	*% of sub-program or activity budget subject to PFB*	*Limits (if any applied) on annual budget variation*	*Evidence of impact of PBF on behaviour of units, etc.*
1						
2						
3						
4						
5						
6						
7						
8						
9						

Identifying information: Institution: _____

and if applicable Faculty: _____

Contact Name: _____ Phone: _____

Fax: _____

Performance-based Funding/Research Matrix

Sub-program or activity subject to PBF	*Level at which PBF operates (institute, Faculty, etc.)*	*Performance indicators used*	*$ at stake*	*% of sub-program or activity budget subject to PFB*	*Limits (if any applied) on annual budget variation*	*Evidence of impact of PBF on behaviour of units, etc.*
1						
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Identifying information: Institution: _____

and if applicable Faculty: _____

Contact Name: _____ Phone: _____

Fax: _____

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Performance-based Funding/Equity Matrix

Sub-program or activity subject to PBF	*Level at which PBF operates (institute, Faculty, etc.)*	*Performance indicators used*	*$ at stake*	*% of sub-program or activity budget subject to PFB*	*Limits (if any applied) on annual budget variation*	*Evidence of impact of PBF on behaviour of units, etc.*
1						
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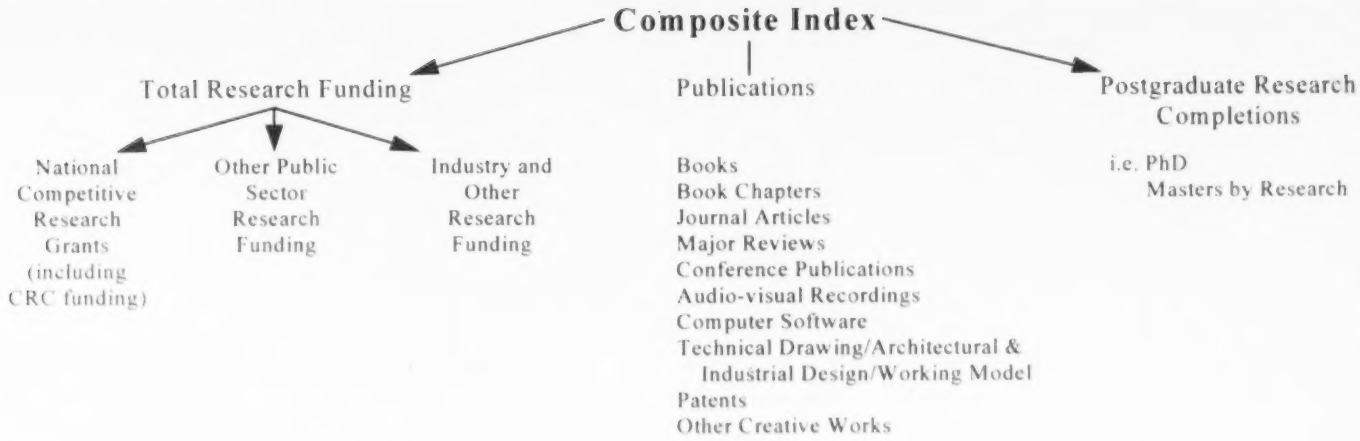
Identifying information: Institution: _____

and if applicable Faculty: _____

Contact Name: _____ Phone: _____

Fax: _____

If performance-based funding has been used, what steps were used to gain acceptance, how successful were these, and what is your overall evaluation of the exercise?



Proposed Phase-in Arrangements for New Index

Year		*Research Funding* %	***Publications*** **%**	*Postgraduate* %	***Total*** **%**
1995	**Final**	**90**	**7**	**3**	**100**
1996	**Final**	**82.5**	**12.5**	**5**	**100**
1997	**Final**	**77.5**	**17.5**	**5**	**100**
1998	**Indicative**	77.5	17.5	5	100
1999	**Indicative**	77.5	17.5	5	100

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Appendix 8

Case Studies

This section enlarges on approaches to performance-based funding in a number of universities which were visited by the project team. Draft reports were checked back with the contact officers; however, these accounts should not be taken as formal and official statements of the universities concerned.

Queensland University of Technology

The system was initiated by the Vice-Chancellor and his deputy. The mechanisms are incorporated in the planning systems of the University.

The system started three or four years ago. There was a major review of the whole planning system for the university, in the course of which there was pressure from those who were performing well for some recognition and reward. There was no strong resistance to the principle of performance-based reward funding, though there was some argument over measures to be used and details of application.

The University does not use DEET formulae in distributing the funds but rather considers holistically how the achievements to be rewarded accord with and advance the university's stated goals.

The Operating Grant from DEET is distributed to faculties in accordance with their student load (EFTSU)—less 2.25 per cent which is held centrally for new ventures and discretionary redistribution. The research quantum is distributed to those who have 'earned' it by research performance, again less a proportion which is retained for major infrastructure (e.g. library support for University-supported Research Centres) and to support new researchers.

The 2.25 per cent pool (or part of it) can be spent on teaching, but there are misgivings about the validity of performance indicators in this area. Equity policy is both a University and a faculty responsibility, and a component is funded centrally. The University does pay attention to outcomes (graduates), as well as to intakes and inputs.

From the inception of performance-based funding, some groups have received extra funding, none have 'lost' funding; underperformers have simply failed to advance or improve their funding. Their contribution to the 2.25 per cent levy has in effect been redistributed to those performing well.

The main effect has been to bring faculty plans into closer alignment with the University's overall plans and goals.

There is no stated date to review the system; it is a new system, steadily being amended incrementally, rather than with a major overhaul.

The idea that the system might be extended from application to research towards application, e.g. to teaching, is an acceptable idea, but there would be a need to improve the present indicators and have them widely accepted before implementing such an extension.

The Queensland University of Technology has no detailed knowledge of the practice of other universities; people tend to learn by word-of-mouth and exchange of selective documents, not by study visits.

Griffith University

The operating grant in the sum of about $125 million is distributed to faculties in accordance with EFTSU. The research quantum is distributed to those who 'earned' it on the same basis as it was earned (the Composite Index). Some $3.5–4 million is distributed to give double the undergraduate funding level for each research postgraduate student enrolled, as a stimulus to encourage more enrolments at this level.

The purpose of performance-based funding at present is to foster Griffith's research activity by distributing research funds on the basis of research performance.

The initiative came from the Vice-Chancellor and the system is controlled from the centre.

It was not particularly difficult to introduce the system. The science-based faculties perform well, but were concerned that if they lost some key staff their performance would suffer and they would lose funding; this does not seem to have occurred. The system was introduced with long lead times (Griffith internally works on a rolling triennial basis) so that staff had time to foresee situations and reflect on their activities. The first year of applying the system to research higher degree students was a pilot project to accustom staff to the idea that they might lose funds as well as gain them.

Griffith each year produces a draft budget which is then open for discussion and fine-tuning before it becomes final.

Griffith, being interdisciplinary in academic structure, does not use DEET's Relative Funding Model which is discipline-based; the University has devised its own formula for distribution of the Operating Grant. Distribution of the research quantum uses the DEET formula. The special extra funding for research higher degree students is based on load, not on completion rates, which are subject to too many variables. Eighty-five per cent of fees from postgraduate students are allocated to their faculties, whereas 65 per cent of fees from overseas undergraduate enrolments go to the faculties. This represents a further attempt to encourage postgraduate enrolments.

There has been little redistributive effect so far. There has been a clawback of some $220 000 from underperforming areas. This money has been used to pay the Higher Education Contribution Scheme for research higher degree students.

Behaviour has altered noticeably, especially in vigorous pursuit of research higher degree enrolment targets and in research grant applications. Overall research performance in Griffith is rising.

The system has been operating only since 1995 and is still being refined; a full-scale review would be premature.

It is likely that the system of enhanced levels of per capita funding will be extended to postgraduate coursework. The University is not yet ready to accept that the indicators for teaching performance are reliable enough to use as a basis for funding. Also, if the whole University's teaching performance improved there would not be funding available to reward it.

Like the Queensland University of Technology, Griffith does not study the practice of other universities and relies on general conversation to learn what they do.

University of Western Australia

The University operates performance-based funding in two distinct ways: formulaically, in the case of the distribution of research funds, and qualitatively in several other areas, including some teaching funds, equity funds and discretionary and matching funds. By 'qualitatively', the University means that it allocates resources in relation to the achievement of performance targets (e.g. the allocation of student places of faculties/courses in response to quality criteria, such as course cut-off TE scores) rather than by formula alone.

The University is currently conducting a pilot study, using 10 departments and 15 teaching and learning indicators, to test performance-based funding based on 'teaching portfolios', with a view to allocating a proportion of the teaching component on that basis.

It has also maintained a University Initiatives Fund, a Strategic Matching Fund and a Vice-Chancellor's Discretionary Fund to support selected high quality activities, where opportunities and performance warrant it. The University is currently investigating ways to factor creative works explicitly into the research funding formula.

Performance-based funding, as described above, is integral to the university's formal planning and budget processes and is driven centrally by the University Executive. The aims of the UWA budget model are to embody and transmit transparent and consistent planning signals, and to reward, increasingly, high performance against agreed criteria. The model uses its own weights, in both the teaching and research components, rather than DEET (RFM) weights, to reflect the particular values and goals of the University of Western Australia.

The proportion of funds explicitly allocated for research performance has increased over time from 5 to 17.5 per cent, with the proportion of funding distributed on research output indicators increasing from 10 to 40 per cent of research funds. The process of starting small and gradually increasing the percentage of funds allocated on performance has been important in gaining acceptance of the model.

The application of performance-based funding via the research component of the UWA model has led to a significant increase (approximately 25 per cent) in per capita research funding and a larger overall research quantum for the university. It has also led to some relative redistribution of funds between the faculties, particularly towards those that are successful in National Competitive Grant applications, but importantly has raised the level of such funds for everyone.

Performance-based funding in the university budget is reinforced by a range of mutually supportive policies in areas such as department and course reviews, promotion and tenure policy, staff development, admissions and enrolment policy, all of which transmit the university's key planning objectives and priorities.

Murdoch University

Murdoch uses performance-based funding for research funding. It also allocates 5 per cent of overseas students' fees as discretionary funding to departments/faculties as a reward and incentive for recruitment of these students.

It uses performance-based funding for research because the output is quantifiable and it is relatively easy to get agreement on the applications. It is possible that in future the University will use performance-based funding for teaching, on the basis of the quality assurance processes that each department/faculty uses; for equity on the basis of targets; and for the general standard of school management.

Introduction of performance-based funding was discussed in the central Executive Group, which includes the Pro-Vice-Chancellor (Research); the Deputy Vice-Chancellor is responsible for the budget. Funding flows from the top to the heads of resource units (library, registry, etc.) and to heads of schools. Since Murdoch is still in a phase of growth, the funding used for performance-based funding is the 'growth money' which is withheld from general distribution and allocated by performance-based funding to heads of schools to apply at their discretion. This gives them a powerful incentive to urge their colleagues to maximise the funding through their performance.

The program was introduced with no resistance to the principle but some debate over the weightings for different criteria. Murdoch uses its own formula, a significant variation of the Composite Index, because it does not regard some CI weightings as fair.

The program has been running for two years. It skims $568 000 off a budget of about $60 million for reallocation, plus the funds received from research quantum and Research Infrastructure grants.

Amongst the consequences have been: the central authorities have a better idea of where research strengths and weaknesses lie; a mentor scheme has been introduced for young researchers, who receive help with making grant applications; there is altogether more focus on getting grants and helping people to improve; and there is better documentation for appraisal and assistance.

There is no timetable for review of the system, since it is so new and modifications are made in the light of experience.

University of Adelaide

Adelaide uses performance-based funding only for research, following the formula for the research quantum with some component of discretion for new researchers and innovations. It also allocates a portion of fee income from overseas students to those areas which attract those students; this might be regarded as a form of performance-based funding.

The initiative for performance-based funding came from the Senior Management Group, and especially from Professor Brown after he became Vice-Chancellor, though he was moving in this direction as Deputy Vice-Chancellor.

The formula used is the research quantum formula; funds are distributed on the same basis as they are earned.

The system has not been operating long enough to perceive big changes in behaviour but it is clear that academics are starting to think in terms of quality output and outcomes. Because of the newness of the system there is no timetable for regular review; it has not yet settled down to the point where it needs such review.

Consideration is currently being given to the introduction of a performance-based component in budgetary allocations to the areas. The model under consideration is similar to that which operates in Tasmania and at the University of Melbourne.

University of Melbourne

For a almost a decade, the University of Melbourne has operated incentive schemes using marginal funding in order to reward initiatives or to help with restructuring. The origin of these funds was the former CTEC one per cent clawback which, when abandoned by the Commonwealth Tertiary Education Commission, was retained by the University for discretionary purposes. In the most recent version, faculties which were judged to be performing significantly above average could win 1 per cent; those below average could lose 1 per cent. Among the indicators used were students' judgements of the quality of teaching and feedback on their learning, focus group interviews led by the Vice-Chancellor, interviews with staff members chosen according to a structured random sample, and the degree to which faculty strategic plans were convergent with the University strategic plan.

Another initiative charged interest to faculties which overran their budget. The penalty was very small but the scheme had considerable impact. No faculty has defaulted since the first round and book keeping has improved markedly.

The plus or minus one per cent scheme is now judged to have run its course. Although only one or two faculties were rewarded or fined, the overall effect was considerable.

The successor scheme being implemented by the new Vice-Chancellor is known as the Strategic Planning Fund. Faculties will be expected to have operational plans which are consistent with budgets and with the university's overall direction. Among the indicators are likely to be students' perceptions of teaching, statistics of academic progress and faculties' own judgements regarding their progress in relation to objectives.

At stake will be 5 per cent skimmed off budgets which faculties will have to bid for. It is expected that the actual amount of money shifted will be of the order of plus or minus one per cent in any year.

Melbourne also reports that DEETYA's scheme of counting the difference in student load between 31 March and 31 August is causing faculties to focus attention on dropout rates and students' needs and to seek advice from the university's Centre for the Study of Higher Education. As an adjunct to this operation the university is imposing a 2 per cent levy which is returned to faculties if their target is met; otherwise it may be retained.

Funds earned from the research quantum are not distributed according to any performance indicators. In part the reason is that the amount expended for research infrastructure is about four times that earned through the Composite Index. In discussing research, Melbourne noted that collection of publications data is expensive and resulted in the installation of a computerised system. The Deputy Vice-Chancellor (Research) operates an incentive scheme according to the same principles applied to general funding: a fund of $200 000 is used as seed money ($10 000 or so) to get particular initiatives started. As with general funding, small amounts produce a highly amplified response.

The concept of performance-based funding is very new to many parts of the University but over the years the operation of a variety of schemes has led to a culture of acceptance. A period of consultation and discussion precedes the adoption of any new scheme. Nevertheless whether individual academic staff members are conscious of the penalties and rewards of the processes is doubted by some.

It has been noted that in all versions of the principle of rewarding performance, a quite small incentive can produce a very significant responses.

Royal Melbourne Institute of Technology

The Royal Melbourne Institute of Technology has initiated a scheme which assesses performance with the intention of considering a shift of resources away from poorly performing courses. It does not, however, directly link performance with funding for general courses and programs. Rather a system of 'objective' indicators is used to generate a listing of courses according to performance. The aim of the process is to use rewards to focus attention on processes. The negative side to this is that strategically important departments which are weak and need help may be damaged and that 'punishment' is not necessarily the best method to improve an ailing course. In some instances the solution may in fact require additional resources.

The indicators which have been used to review departments are:

- demand;
- Tertiary Entrance Rank of incoming students;
- pass rates;
- retention rates;
- positive graduation outcomes;
- CEQ good teaching scale; and
- CEQ overall satisfaction scale.

Faculty agreement was obtained for the appropriateness of these indicators. The first application in 1996 produced a list of courses, 5 per cent of which were judged to be below a satisfactory level of performance. The departments responsible for these received a letter requesting an explanation. In some instances the validity of the data was contested, in others there were alleged circumstances beyond the control of the department. The exercise, through provision of performance information relative to other courses, strengthens the position of deans in either reforming or in shifting resources.

Strategic factors considered in making recommendations regarding the future of courses include:

- congruence with RMIT's strategic goals;
- links with industry;

- campus location (e.g. the Tertiary Entrance Rank varies with campus);
- equity initiatives;
- government requirements (e.g. professional registration);
- links with international initiatives;
- projected labour market;
- the time the course has been operating;
- recent curriculum redesigns; and
- progression to research.

Further discussion at senior management level has led to the conclusion that the indicators and methods may be better suited to making strategic resource decisions. In distributing the operating grant some faculties use graduation rates, total staff load and capacity to earn other income. It is reported that there tends to be a large response for a small investment.

Funds earned for research are distributed in part according to indicators of publications and research income (but not completions). Thus the money tends to go to those departments responsible for earning it.

DEET's scheme to prevent what it regards as double dipping related to fees charged for postgraduate courses involves determining if there is a gap between funded load at 31 March and a count at 31 August. In cases where there is a drop the institution is required to return the discounted HECS funding, and internally faculties who contributed to the problem pay back according to their under-enrolment. This has the effect of focussing attention on monitoring of attrition and on second semester admissions. Allowance needs to be made for students who convert from full to part time in order to take up a job.

The course performance strategy has had a big impact in increasing awareness of processes at departmental level, but many individual academics are unaware of the scheme or that there are consequences for good or bad ratings on the indicated topics.

Macquarie University

Performance-based funding of research has existed in one form or another from the early 1980s when it was seen as a natural step in Macquarie's maturation as a university. The decision to establish an expanding pool of funds for research and related equipment purposes, and to allocate them across the University on the basis of research performance was well received. While traditionally strong research areas fared well in the

competition, other areas benefited from the chance to compete for a share of the growing pool of funds.

Research funding is administered centrally through eight schemes by a small research committee chaired by the Deputy Vice-Chancellor (Research) which uses a variety of performance indicators, rather than a formulaic approach. For six of these sub-programs, the funds (totalling $2.8 million in 1996) go directly on competitive merit to individual researchers and research students; a major portion of the equipment fund ($3.2 million in 1996) and a research component ($1.2 million) of the DEET grant are allocated to schools, also according to research performance.

Income from the research quantum ($5.8 million in 1996) is allocated separately, mainly to build up research infrastructure across the University, although some of it is also allocated competitively.
The research funding system is reviewed annually by the Research Committee, and debate on principles and practice also occurs at the Academic Senate. The system has developed incrementally, with no major turning points or milestones. For the future, it is likely that the research component of the operating grant allocated to schools will be progressively boosted over a long period until it represents something like 30 per cent of the allocation, compared with less than 5 per cent at present. With that change, the potential for redistribution of funds among schools will be substantially increased.

While there are now increased opportunities to compete, not all schools have fared well and some have gained very little of the allocation for research (although their total budget may have grown with the increase in student numbers). School reviews have helped to identify factors underlying weaknesses in research performance in particular areas, and to suggest remedial measures.

Macquarie believes there are no dysfunctional effects associated with its approach. On the other hand, it believes that uncritical adoption of the Competitive Composite Index, for example, could discourage researchers from seeking industry grants because of the low weighting such grants receive relative to National Competitive Research Grants.

Macquarie has not as yet extended performance-based funding into the teaching area in any systematic way. While it is well advanced in course evaluation using its own surveys and the Course Evaluation Questionnaire, it doubts that sufficiently reliable measures of teaching performance yet exist to drive budget allocations. It points out, however, that 1995 Quality Review money was used to reward areas judged to be strong in teaching by the review team. Further, some postgraduate courses are almost wholly dependent for their funding on fee income and as such will stand or fall according to how the market judges their performance.

The School Funding Model has an element of performance funding in that the weightings favour increased enrolments in postgraduate programs, especially research programs, in line with the strategic plans of the university.

University of Western Sydney—Nepean

Nepean is the only UWS network member to have adopted a performance-based funding approach to any real extent to date.

Even so, at Nepean the approach is confined to the research area and there are no plans to extend it into the teaching or equity areas.

The idea of subjecting a component of faculty budgets to funding on the basis of research performance was initiated three years ago, by the then Chief Executive Officer, building on the approach taken by the University of Adelaide Faculty of Engineering. Initially, 10 per cent of the operating grant across faculties was earmarked for allocation on the basis of research performance, with 90 per cent of the allocation being load-driven. The research component was adjusted in successive years to 13 per cent, 20 per cent and, for 1996, 15 per cent. Three categories of research performance are currently assessed with equal weight being given to each: research grant income; publications and dissemination; and research development. The first two categories are assessed with standard indicators but three-year rolling averages are used and the weightings differ a little from those in the Competitive Composite Index. For the research development category, Nepean is using its own indicators. For their own part faculties are moving towards performance-based internal allocation of resources for research, although at different rates at present.

Nepean's shares of the research quantum and the Research Infrastructure Block Grant are allocated directly to departments and research centres/groups using a slightly modified Competitive Composite Index for the former and the standard index for the latter.

Nepean's Senior Management Group was responsible for developing the details of the approach to be taken to performance-based funding, with many options being considered along the way. Consultation with staff occurred at faculty level, and the approach finally adopted enjoys a high degree of acceptance. The database of research performance is maintained by the Research Office. A Pro-Vice-Chancellor (Research) was appointed for the first time at the end of last year, and has general oversight of the program.

Faculties without strong research performance have seen their operating grant reduced by an average of one per cent per year since the inception of the program. Strong faculties have gained by a similar average amount. All faculties are looking to lift their research performance in an effort to win more external funding, both through grants and the research quantum itself. The recruitment of researchers at professional level and the provision of scholarships and study leave for staff members to obtain research qualifications and experience are measures being taken towards this end.

The program was to run for an initial period of three years and then to be reviewed. In fact it has been adjusted each year and will now be reviewed annually as part of the budget process.

The University of New South Wales

The University of New South Wales began developing its own indicators of research performance using data contained in the research statistics collection started by the Department of Employment, Education and Training in 1989. Its approach was still at a fairly formative stage when the Department introduced the research quantum and the University decided to swing over to that formulation.

DEET block research allocations—for small grants, the research quantum and research infrastructure block grants—are distributed to faculties in accordance with their standing on the relevant DEET index and faculties are provided with a set of guidelines for further distribution. Major emphasis is placed on strong research groups, multidisciplinary research and new researchers. A positive approach is also taken centrally in reserving a portion of the infrastructure block to support University-wide beach-head facilities, such as the Electron Microscope Unit and High Performance Computing.

The distribution of funds from the centre is managed by a Research Management Committee, chaired by the Deputy Vice-Chancellor (Research and International). This is a committee in its own right, not a sub-committee of the Academic Board and develops policy on strategic directions in research. In turn, faculties have their own Research Management Committees.

With 90 per cent of faculty operating grants—including their share of the research quantum—consumed by salaries, there is currently little flexibility to make major changes in the short term, but steps are being taken to increase flexibility. It is unusual for a faculty budget to vary by more than two per cent between years. Deans however may choose to place more emphasis on high performance. The University is satisfied that the DEET

formulae are rewarding appropriate research behaviour and not leading to distortion of research agendas.

On the teaching side, the University is not persuaded that sufficiently good indicators exist to support performance-based approaches to funding. The University does retain discretionary funds amounting to $4 million to $6 million at the centre in order to support teaching through development and equipment grants. These are application based but are determined on the basis of the performance of individual applicants. The bulk of additional funds that came from the 1994 Quality Review of Teaching and Learning were allocated on a similar basis, with the balance being used for honours and exchange scholarships.

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